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VOL. LXXIII.

SEVENTH SERIES.—VOL. I.

NATIONAL MUSEUM OF ANTIQUITIES OF SCOTLAND,
QUEEN STREET, EDINBURGH.

PRINTED FOR THE SOCIETY BY NEILL AND COMPANY, LTD.

MCMXXXIX.

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L A W S
OF THE
SOCIETY OF ANTIQUARIES OF SCOTLAND.

INSTITUTED NOVEMBER 1780 AND INCORPORATED BY
ROYAL CHARTER 6TH MAY 1783.

(Revised and adopted November 30, 1901.)

1. The purpose of the Society shall be the promotion of ARCHEOLOGY, especially as connected with the investigation of the ANTIQUITIES AND HISTORY OF SCOTLAND.

2. The Society shall consist of Fellows, Honorary Fellows, Corresponding Members, and Lady Associates.

3. Candidates for admission as Fellows must sign the Form of Application prescribed by the Council, and must be proposed by a Fellow and seconded by two members of the Council. Admission shall be by ballot.

4. The Secretaries shall cause the names of the Candidates and of their Proposers to be inserted in the billet calling the Meeting at which they are to be balloted for. The Ballot may be taken for all the Candidates named in the billet at once; but if three or more black balls appear, the Chairman of the Meeting shall cause the Candidates to be balloted for singly. Any Candidate receiving less than two-thirds of the votes given shall not be admitted.

5. Honorary Fellows shall consist of persons eminent in Archæology, who must be recommended by the Council, and balloted for in the same way as Fellows; and they shall not be liable for any fees of admission or annual subscriptions. The number of Honorary Fellows shall not exceed twenty-five.

6. Corresponding Members must be recommended by the Council and balloted for in the same way as Fellows, and they shall not be liable for any fees of admission or annual subscriptions.

7. Ladies who have done valuable work in the field of Archæology may be admitted as Lady Associates. The number of Lady Associates shall not exceed twenty-five. They shall be proposed by the Council and

balloted for in the same way as Fellows, and shall not be liable for any fees of admission or annual subscriptions.

8. Before the name of any person is added to the List of Fellows, such person shall pay to the funds of the Society Two Guineas as an entrance fee and One Guinea for the current year's subscription, or may compound for the entrance fee and all annual subscriptions by the payment of Twenty Guineas at the time of admission. Fellows may compound for future annual subscriptions by a single payment of Fifteen Guineas after having paid five annual subscriptions; or of Ten Guineas after having paid ten annual subscriptions.

9. The subscription of One Guinea shall become due on the 30th November in each year for the year then commencing; and if any Fellow who has not compounded shall fail to pay the subscription for three successive years, due application having been made for payment, the Treasurer shall report the same to the Council, by whose authority the name of the defaulter may be erased from the list of Fellows.

10. Every Fellow not being in arrears of the annual subscription shall be entitled to receive the printed Proceedings of the Society from the date of election.

11. None but Fellows shall vote or hold any office in the Society.

12. Subject to the Laws and to the control of the Society in General Meetings, the affairs of the Society shall be managed by a Council elected and appointed as hereinafter set forth. Five Members of the Council shall be a quorum.

13. The Office-Bearers of the Society shall consist of a President, three Vice-Presidents, two Secretaries for general purposes, two Secretaries for Foreign Correspondence, a Treasurer, two Curators of the Museum, a Curator of Coins, and a Librarian. The President shall be elected for a period of five years, and the Vice-Presidents for a period of three years. One of the Vice-Presidents shall retire annually by rotation and shall not again be eligible for the same office until after the lapse of one year. All the other Office-Bearers shall be elected for one year and shall be eligible for re-election.

14. In accordance with the agreement subsisting between the Society and the Government, the Board of Manufactures (now the Board of Trustees) shall be represented on the Council by two of its Members (being Fellows of the Society) elected annually by the Society. The Treasury shall be represented on the Council by the King's and Lord Treasurer's Remembrancer (being a Fellow of the Society).

15. The Council shall consist of the Office-Bearers, the three representative Members above specified, and nine Fellows, elected by the Society.

16. Three of the nine elected Members of Council shall retire annually by rotation, and shall not again be eligible till after the lapse of one year. Vacancies among the elected Members of Council and Office-Bearers occurring by completion of term of office, by retirement on rotation, by resignation, by death or otherwise, shall be filled by election at the Annual General Meeting. The election shall be by Ballot, upon a list issued by the Council for that purpose to the Fellows at least fourteen days before the Meeting.

17. The Council may appoint committees or individuals to take charge of particular departments of the Society's business.

18. The Annual General Meeting of the Society shall take place on St Andrew's Day, the 30th of November, or on the following day if the 30th be a Sunday.

19. The Council shall have power to call Extraordinary General Meetings when they see cause.

20. The Ordinary Meetings of the Society shall be held on the second Monday of each month, from December to May inclusive.

21. Unless special arrangements to the contrary have been made, copyright of *The Proceedings* and of all papers printed therein, as well as of all illustrations, shall belong to the Society. This provision shall not apply to illustrations made from blocks borrowed from outside sources.

22. Every proposal for altering the Laws must be made through the Council; and the Secretaries, on instructions from the Council, shall cause intimation thereof to be made to all the Fellows at least one month before the General Meeting at which it is to be determined on.

Form of Special Bequest.

I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, my collection of _____ and I direct that the same shall be delivered to the said Society on the receipt of the Secretary or Treasurer thereof.

General Form of Bequest.

I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, the sum of £ _____ sterling [*to be used for the general purposes of the Society*] [*or, to be used for the special purpose or object of* _____], and I direct that the said sum may be paid to the said Society on the receipt of the Treasurer for the time being.

LIST OF THE FELLOWS, CORRESPONDING MEMBERS, HONORARY FELLOWS, ETC.

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND,

NOVEMBER 30, 1939

PATRON :

HIS MAJESTY THE KING.

- | | |
|--|---|
| 1932.*ADAM, DAVID RANKINE, 75 Stewarton Drive, Cambuslang. | 1931. ANDERSON, Rev. JOHN, The Manse, Portnavor, Islay. |
| 1938. AGNEW, Colonel H. C., Bunjedward House, Jedburgh. | 1902.*ANDERSON, Major ROBERT DOUGLAS, c/o The Manager, Lloyd's Bank, Paignton, Devon. |
| 1931. AGNEW, Rev. HUGH M., M.A., Minister of St George's Presbyterian Church, 20 St James Road, East London, South Africa. | 1920. ANDERSON, Rev. ROBERT S. G., B.D., The Manse, Castle Kennedy, Wigtownshire. |
| 1917. AGNEW, STAIR CARNEGIE, M.A., LL.B., Barrister-at-Law, 60 Elm Park Gardens, London, S.W. 10. | 1936. ANDREW, Rev. HARRY, Minister of Gillfillan Memorial Church, Gillfillan Manse, Anstruther Road, Dundee. |
| 1933.*AILSA, The Most Hon. The MARCHIONESS OF, Culzean Castle, Maybole. | 1921. ANGUS, WILLIAM, Keeper of the Registers and Records of Scotland, H.M. General Register House, Edinburgh, 2. |
| 1935. AINSWORTH, JOHN FRANCIS, M.A., F.H.S.A.I., c/o British Record Society, Ltd., 129 Chancery Lane, London, W.C. 2. | 1926.*ANGUS-BUTTERWORTH, LIONEL MILNER, F.R.G.S., F.C.I.S., A.M.I.Mech.E., Vice-President of the Ancient Monuments Society, Ashton New Hall, The Old Village, Ashton-on-Mersey, Cheshire. |
| 1920. ALEXANDER, W. M., Journalist, Hillview Road, Culta, Aberdeenshire. | 1910. ANNAN, J. CHAID, Glenbank, Lenzie. |
| 1936. ALLAN, E., P.R.C.S.Ed., West View, Rose Avenue, Elgin. | 1931. ARBUCKLE, WILLIAM F., M.A. (Edin. & Oxon.), H.M.I.S., 1 Murrayfield Gardens, Edinburgh, 12. |
| 1930. ALLAN, Mrs H. M., 10 Ainslie Place, Edinburgh, 3. | 1931. ARCHER, GILBERT, St Ola, Park Road, Leith, Edinburgh, 6. |
| 1937. ALLAN, JOHN, M.A., F.S.A., Keeper of Coins, The British Museum, London, W.C. 1. | 1918.*AROTILL, His Grace The DUKE OF, Inveraray Castle. |
| 1926. ALLAN, WILLIAM, M.B.E., Rhindmuir House, Ballieston. | 1910. ARMSTRONG, A. LESLIE, M.C., F.S.I., F.S.A., 27 Victoria Road, Stockton Heath, Warrington. |
| 1929. ANCKORN, WILFRED LORRAINE, Three-Corner Mead, Duntun Green, Kent. | 1921. ARNOTT, JAMES ALEXANDER, F.R.I.B.A., 24 Duke Street, Edinburgh, 1. |
| 1925. ANDERSON, ALEXANDER HUTTON, M.A., Donaldson's Hospital, Edinburgh, 12. | 1921. ASHWORTH, Mrs, Hillbank, Grange Loan, Edinburgh, 9. |
| 1922.*ANDERSON, ARTHUR R., 8 Park Terrace, Glasgow, C. 3. | |
| 1897. ANDERSON, Major JOHN HAMILTON, 2nd East Lancashire Regiment, c/o Messrs Cox & Co., 16 Charing Cross, London, S.W. 1. | |

An asterisk (*) denotes Life Members who have compounded for their Annual Contributions.

1931. ASKEW, GILBERT H., 48 Brackendale, Potters Bar, Middlesex.
- 1917.*ATHOLL, His Grace The DUKE OF, K.T., C.B., M.V.O., D.S.O., LL.D., Blair Castle, Blair Atholl.
1915. BAILLET DE LATOUR, The Countess VINCENT, Egerton, Alta Vista Road, Paignton, S. Devon.
1933. BAIN, F. W., M.C., 29 Palace Court, London, W. 2.
1936. BAIRD, GERALD FONTAY, F.L.A.S., Chartered Land Agent, Derwent, Helensburgh.
1925. BAIRD, JAMES, 81 Meadowpark Street, Dennistoun, Glasgow, E. 1.
1922. BAIRD, Sir WILLIAM MACDONALD, J.P., F.F.S., 7 St Colme Street, Edinburgh, 3.
1918. BALFOUR, Lieut.-Col. FREDERICK ROBERT STEPHEN, M.A., D.L., Dawyck, Stobo, Tweeddale.
1933. BALFOUR, The Hon. JAMES MONCREIFF, O.B.E., 44 Gloucester Square, London, W. 2.
1926. BALFOUR-MELVILLE, EVAN W. M., M.A., Lecturer in History in the University of Edinburgh, 2 South Leamonth Gardens, Edinburgh, 4.
- 1915.*BALLANTINE, JAMES, 24 Hill Street, Edinburgh, 2.
1936. BALLANTINE, WILLIAM ARCHIBALD, F.S.I., Chartered Surveyor, 10 Murrayfield Gardens, Edinburgh, 12.
1926. BANNERMAN, JOHN, St Margarets, Elgin.
1925. BANNERMAN, Captain RONALD R. BRUCE, M.C., 19 Dornton Road, South Croydon.
1931. BANCLAY, Rev. WILLIAM, M.A., Minister of Shawlands Old Church, 47 Monreith Road, Newlands, Glasgow, S.3.
1936. BARNETSON, JAMES, J.P., Georgienas, Halkirk, Caithness.
- 1897.*BARNETT, Rev. T. RAYCHIFF, Ph.D., 7 Corrennie Gardens, Edinburgh, 10.
1935. BARR, JOHN M., Writer, 120 St Vincent Street, Glasgow.
1922. BARNIE, JOHN ALEXANDER, 11 Lady Road, Edinburgh, 9.
1910. BARRON, Rev. DOUGLAS GORDON, O.B.E., V.D., D.D., Ardchoille, Aberfoyle.
1923. BARRON, EVAN MACLEOD, LL.D., Proprietor and Editor of *The Inverness Courier*, Inverness.
1922. BARTON, Dr SAMUEL SAXON, O.B.E., F.R.F.P.S. (Glas.), L.R.C.P. (Edin.), 61 Parkfield Road, Salford Park, Liverpool, 17.
1931. BATHGATE, THOMAS D., Gersa Schoolhouse, Watten, Caithness.
1927. BATTENSBY, JAMES, F.R.C.S.Eng., etc., Edenkerry, Helensburgh.
1930. BAXTER, WILLIAM, Public Works Contractor, Eskdale, 153 High Street, Tranent.
- 1884.*BEATON, Lieut.-Colonel ANGUS J., C.M.G., V.D., c/o Standard Bank of South Africa, 10 Clement's Lane, London.
1931. BEATTIE, DAVID J., Sculptor, Kenilworth, Talbot Road, Carlisle.
1935. BELL, Miss ELIZABETH TURNER, J.P., F.E.I.S., 4 Rillbank Crescent, Edinburgh, 9.
1937. BELL, GEORGE E. J., The Studio, 3 Challoner Crescent, West Kensington, London, W.14.
- 1929.*BELL, Rev. WILLIAM NAPIER, M.A., 37 Oakfield Avenue, Glasgow, W. 2.
1921. BENTINCK, Rev. CHARLES D., D.D., 29 Nile Grove, Edinburgh, 10.
1928. BENTON, Miss SYLVIA, M.A. (Camb.), B.Litt., 6 Winchester Road, Oxford.
1929. BERTHAM, DONALD, Manager, Orkney Steam Navigation Co., Ltd., 20 East Road, Kirkwall.
1925. BEVERIDGE, JAMES, M.A., Wellbank, Linlithgow.
1930. BEVERIDGE, Rev. JOHN, M.R.E., B.D., 38 Broomhouse Road, Corstorphine, Edinburgh, 12.
1927. BICKERSTETH, Miss MARGUERITE ELIZABETH, Ph.D., 32 Stafford Street, Edinburgh, 3.
- 1932.*BIMLEY, EMIC, M.A., F.S.A., 22 Old Elvet, Durham.
1909. BISHOP, ANDREW HENDERSON, Thornton Hall, Lanarkshire.
1922. BISHOP, FREDERICK, Ruthven House, Colinton.
1924. BISSET, ALEXANDER MACDONALD, Bertha Cottage, Bathgate.
1936. BISSET, Lieut.-Colonel J. S., R.E. (retired), 135 Warrender Park Road, Edinburgh.
1937. BLACK, ANDREW, "Carnethy," 8 Clepington Road, Maryfield, Dundee.
1933. BLACKATER, JOHN C., Jr., F.R.G.S., F.Z.S.(Scot.), Royal Exchange (Box 1), Queen Street, Glasgow, C.1.
1932. BLACKWOOD, ROBERT, J.P., 9 Oxford Street, Dundee.
1926. BLAIR, GEORGE, 8 Crown Road North, Glasgow, W. 2.
1929. BLAIR, ROBERT K., W.S., Globe Cottage, Gullane, East Lothian.
1909. BLUNDELL, Rev. ODO, O.S.B., Fonthill Abbey, Tisbury, Wilts.
1917. BONAR, JOHN JAMES, Eldinbrae, Lawswade.
1925. BONNAR, WILLIAM, 51 Braid Avenue, Edinburgh, 10.
1928. BORENIUS, TANCRID, Ph.D., D.Lit., F.S.A., Professor of the History of Art in the University of London, 28 Kensington Gate, Kensington, London, W. 8.
1932. BOSWORTH, WILLIAM GEORGE, Librarian and Curator, Public Library, Museum, and Public Hall, Altrincham.

1936. BOWIE, J. McLINTOCK, F.R.I.B.A., Byrlaw, Dalbeattie Road, Dumfries.
1937. BOYLE, Miss MARY E., Kindrochat, Comrie, Perthshire.
1928. BROOK, GEORGE BERNARD, F.I.C., M.Inst.M.M., F.C.S., F.R.S.E., The Kingsway Hotel, 22 Albany Street, Edinburgh, 2.
1908. BROOK, WILLIAM, 87 George Street, Edinburgh, 2.
1928. BROOK, WILLIAM, 42 Dundas Street, Stromness, Orkney.
1903. BROWN, ADAM, Netherby, Galashiels.
1932. BROWN, MCIL JERMYN, M.A., Buccleuch House, Melrose.
1924. BROWN, CHARLES HERBERT, K.C., Sheriff of the Lothians and Peebles, "Rosehill," Inveresk, Midlothian.
1921. BROWN, DONALD, 15 Archdeacon Crescent, Cockerton, Darlington.
1933. BROWN, Sheriff GEORGE, Berstane House, St Ola, Orkney.
1921. BROWN, THOMAS, A.R.I.B.A., Head of the Building Department, Heriot-Watt College, Edinburgh, 1.
1932. BROWNLEE, DAVID ANGUS, Brownlee Cottage, Colston, Bishopbriggs.
1922. BRUNWIN, GEORGE EUSTACE, Haverings, Rayne, Braintree, Essex.
1936. BRYCE, JAMES HUTCHISON, Searcher of Records, 22 West Mayfield, Edinburgh, 9.
1902. BRYCE, Emeritus Professor THOMAS H., M.A., M.D., LL.D., F.R.S., The Loaning, Peebles, — *Vice-President*.
1922. BRYDEN, ROBERT LOCKHART, B.L., 12 Selborne Road, Jordanhill, Glasgow.
1935. BRYDON R. S., M.A.(Hons.), Ph.D., Craig Arnag, Pitlochry, Perthshire.
1937. BULLIVANT, LINDSEY FRANK, L.R.I.B.A., 150 Bristol Road, Birmingham, 5.
1925. BUNNET, J. R. WARDLAW, K.C., Sheriff of Fife, 60 Northumberland Street, Edinburgh, 3.
1892. BURNETT, Rev. J. H., B.D., D.D., The Manse, Fetteresso, Stonehaven.
1911. BURNETT, Rev. WILLIAM, B.D., 8 Bellevue Terrace, Edinburgh, 7.
1934. BURNS, JOHN C., B.A., Assoc.M.Inst.C.E., 138 Newhaven Road, Edinburgh, 6.
1925. BURNS, JOHN GEORGE, Sheriff-Substitute of Dunbartonshire, Sheriff's Chambers, County Buildings, Dumbarton.
1933. BURNS, THOMAS PILKINGTON, Mortimer Lodge, Mortimer, Berkshire.
1925. BURNSIDE, Rev. JOHN W., M.A., 505 Strathmartine Road, Dundee.
1928. BURNELL, Sir WILLIAM, Hutton Castle, Berwick-upon-Tweed.
1927. BUSHNELL, GEORGE H., University Librarian, St Andrews, St Johns, St Andrews.
1939. BUTCHART, CHARLES BRUCE RIVERS, Worthy Park, Winchester, Hants.
1901. BUTE, The Most Hon. The MARQUESS OF, K.T., Mount Stuart, Rothesay.
1936. CARLE, JAMES EWEN, M.B., Ch.B., D.P.H., 53 East High Street, Forfar.
1931. CALDER, CHARLES C., Bernera, Dalvey, Forres, Morayshire.
1921. CALDER, CHARLES S. T., A.R.I.A.S., Assistant Architect, Royal Commission on Ancient Monuments (Scot.), 27 York Place, Edinburgh, 1.
1930. CALDER, WILLIAM M., M.A., LL.D., F.B.A., Professor of Greek, University of Edinburgh; Editor of *Classical Review*; 58 St Alban's Road, Edinburgh, 9, — *Secretary for Foreign Correspondence*.
1919. CALLANDER, ALEXANDER D., Lallopitiya, Ratnapura, Ceylon.
1929. CALLANDER, WILLIAM A., Writer, 100 West Regent Street, Glasgow, C. 2.
1910. CAMERON, Sir D. Y., R.A., R.S.A., R.S.W., LL.D., Dun Eaglais, Kippen.
1922. CAMERON, Colonel DONALD C., C.B.E., M.A., R.A.S.C., Truxford, Thursley Road, Elstead, Surrey.
1936. CAMERON, Rev. JOHN A., M.A., B.D., Hon.C.F., The Manse, Legerwood, Earliston, Berwickshire.
1930. CAMERON, Rev. JOHN KIRKLAND, The Manse, Auchterhouse, near Dundee.
1931. CAMERON, NEIL, Mayfield, Thornhill Park, Sunderland.
1937. CAMERON, WILLIAM JOHN, J.P., Estate Office, Flichity, by Inverness.
1905. CAMERON-SWAN, Captain DONALD, F.R.A.S., 29 Kensington Crescent, Cape Town, South Africa.
1930. CAMPBELL, CHARLES, M.B.E., 48 Rannoch Drive, Bearsden, Dunbartonshire.
1929. CAMPBELL, HUGH RANKIN, Ardfern, 1 Woodburn Road, Newlands, Glasgow.
1930. CAMPBELL, JAMES A., "Glenbank," Dunblane.
1925. CAMPBELL, JOHN DOUGLAS-BOSWELL, 25 Ainslie Place, Edinburgh, 3.
1938. CAMPBELL, JOHN HOPK, W.S., 31 Moray Place, Edinburgh, 3.
1934. CAMPBELL, Rev. JOHN MCCORMACK, Tollcross Park Manse, 91 Drumover Drive, Glasgow, E. 1.
1931. CANT, Rev. ALAN, B.D., B.Sc., Manse of Creich, Cupar-Fife.

1901. CAUFHAR, GEORGE, 77 George Street, Edinburgh, 2.
1931. CAGILL, Sir JOHN T., Bart., D.L., LL.D., 10 Lowther Terrace, Glasgow.
1939. CARMICHAEL, DAN, 238 Arbroath Road, Dundee.
1908. CARMICHAEL, EVELYN G. M., O.B.E., Barrister-at-Law, Berrington Hall, Shrewsbury, Salop.
1923. CARNEY-ARBITHNOTT, Lieut.-Col., Balmahoon, Brechin.
1922. CARRUTHERS, ARTHUR STANLEY, A.C.A., "The Rough," 5 Hayes Lane, Kenley, Surrey.
1938. CARSON, JAMES, M.B.E., F.R.I.S., Headmaster, Rosale Farm School, Montrose, Angus.
1932. CARTER, HARTLEY SIDNEY, M.D., B.P.H., Ch.B., Public Health Laboratory, 20 Cochrane Street, Glasgow, C. I.
1937. CARTWRIGHT, JOHN, Architect, Ancient Monuments Department, H.M. Office of Works, 37 Baberton Crescent, Juniper Green.
1890. CAW, Sir JAMES L., LL.D., 11 Cluny Place, Edinburgh, 10.
1929. CHALMERS, FRANCIS, W.S., 20 Correnside Gardens, Edinburgh, 10.
1919. CHALMERS, Rev. HENRY REID, 50 Grove Road, West Ferry, Dundee, Angus.
1928. CHAMNEY, WILLIAM, J.P., 15 Elgin Road, Dublin.
1935. CHAPLIN, Mrs DOROTHEA, Sesame Club, 49 Grosvenor Street, London, W. 1.
1934. CHAPMAN, ALLAN, M.A., M.P., Torsnoce, Stow, Midlothian.
1939. CHEYNE-McTHERSON, Captain W. G. D., M.C., Rannoch Lodge, Inverness.
1927. CHILDE, Professor V. GORDON, D.Litt., D.Sc., F.S.A., Professor of Archaeology, The University, Edinburgh, 8,—*Secretary for Foreign Correspondence*.
1932. CHRISTIE, Bailie DOUGLAS MORRISON, J.P., "Nampur," 8 Dalkeith Road, Dundee.
1901. CHRISTIE, Miss, Cowden Castle, Dollar.
1910. CHRISTISON, JAMES, J.P., F.L.A., Librarian, Public Library, Montrose.
1902. CLARE, ARCHIBALD BROWN, M.A., Emeritus Professor of Political Economy, University of Manitoba, 134 West Saville Terrace, Edinburgh, 9.
1936. CLARK, ARTHUR, 17 Union Avenue, East London, South Africa.
1938. CLARK, JAMES ALASDAIR, Tigh na H-Eala, Milngavie, Dunbartonshire.
1936. CLARK, Mrs JANE INGLIS, J.P., Beaumont Lodge, 29 Greenhill Gardens, Edinburgh, 10.
1921. CLARK, WILLIAM FORDYCK, Hillgarth, Balta Sound, Shetland Isles.
1908. CLAY, ALEXANDER THOMSON, W.S., 18 South Leamonth Gardens, Edinburgh, 4.
1938. CLENDENIN, PAUL DANA, Clifford House, Kensington Court, London, W. 8.
1929. CLIFFORD, Mrs ELIZ MARGARET, Chandlers, Witcombe, Glou.
1916. CLOUSTON, ERIC CROSBY TOWNSEND, M.R.C.S.(Eng.), L.R.C.P.(Lond.), Priory Lodge, Tonbridge, Kent.
1917. CLOUSTON, J. STORRE, O.B.E., Smooagro House, Orphir, Orkney.
- 1922.*CLOUSTON, RONALD GILLAN, L.R.C.P. (Edin.), L.R.C.S. (Edin.), 10 Carrington Street, Glasgow, C. 4.
- 1921.*CLOUSTON, THOMAS HAROLD, O.B.E., Langskail, 5 Atherton Drive, Wimbledon Common, London, S.W. 19.
1929. CLOW, ANDREW, Solicitor, Alma Villa, Aberfeldy.
1905. CLYDE, The Right Hon. LORD, LL.D., Brighlands, Rumbling Bridge, Kinross-shire.
- 1901.*COCHRAN-PATRICK, Lady, Woodside, Berth.
- 1898.*COCHRAN-PATRICK, Sir NEIL J. KENNEDY, K.B.E., J.P., D.L., of Woodside, Advocate, Ladyland, Berth.
- 1919.*COCKBURN, Captain ARCHIBALD FREDERICK, R.E. (T.F.), 20 Curzon Street, Mayfair, London, W. 1.
1929. COCKBURN, Rev. J. HUTCHISON, D.D., The Cathedral Manse, Dunblane.
- 1920.*COLLINGWOOD, Professor R. G., LL.D., M.A., F.S.A., 15 Belbroughton Road, Oxford.
1929. COLLUM, Miss V. C. C., Withyfold, Wenhain Way, Peaslake, Guildford.
1930. COLQUHOUN, Sir IAIN, of Luss, Bart., K.T., D.S.O., LL.D., Rossshu, Luss, Dunbartonshire.
1924. COLT, H. DUNSCOMB, c/o Farmer's Loan and Trust Co., 15 Cockspur Street, London, S.W. 1.
- 1921.*COLVILLE, Captain NORMAN R., M.C., Penheale Manor, Egloskerry, Cornwall.
1931. CONACHER, HUGH MORRISON, 45 Marchmont Road, Edinburgh, 9.
1932. CONNELL, WILLIAM, Belmont, London Road, Bracknell, Berks.
1933. CONNOR, Rev. JOHN M., D.S.O., M.A., C.Pret., 14 Cypress Road, Newport, Isle of Wight.
1921. COOK, JOHN, W.S., 61 Castle Street, Edinburgh, 2.
1938. COOK, JOHN MANTYL, B.A., 88 Thirlestane Road, Edinburgh, 9.
1938. COOPER, The Rt. Hon. T. M., K.C., M.P., The Lord Advocate, 16 Hermitage Drive, Edinburgh, 10.
1920. CORNELIUS, Rev. WILLIAM J. J., D.Litt., D.C.L., D.D., M.A., B.D., D.Sc., A.K.C., F.R.Hist.S., C.F., etc., The Vicarage, Peacehaven, Sussex.

1920. *CORRAN, KENNETH CHARLES, of Rosely, Rubislaw, 75 Braid Avenue, Edinburgh, 10.
1935. COCHTNEY-LATIMER, Miss MARJORIE EILEEN, Curator, East London Museum, 8 Lake St Vincent, P.O., Cambridge, South Africa.
1931. COWE, WILLIAM, Tweedville, 3 Thorburn Road, Colinton, Edinburgh, 13.
1929. COWIE, ALEXANDER M., M.B., C.M., Glenrinnan, Dufftown, Banffshire.
1929. COWIE, MORTON J. H., A.R.I.B.A., "Dunrisdeer," St John's Road, Corstorphine, Edinburgh, 12.
1893. *COX, ALFRED W., Glendock, Glencarse, Perthshire.
1901. *COX, DOUGLAS H. (no address).
1935. CRAIG, JOHN, M.B., Ch.B., M.R.C.P.E., 5 Albyn Terrace, Aberdeen.
1932. CRAIG-BROWN, CLIVE, Comely Bank, Selkirk.
1925. CRAIG-BROWN, Brigadier-General E., D.S.O., Cross Roads, Currie, Midlothian.
1928. CHAIGIE, JOHN, Master Mariner, 4 Gill Pier, Westray, Orkney.
1927. CRANSTON, Colonel C. J. EDMONDSTONE, D.S.O., Corhouse, Lanark.
1936. CRAWFORD, HENRY JAMES, B.A. (Lond.), c/o Lloyds Bank, 203 Tottenham Court Road, London, W. 1.
1922. CRAWFORD, JAMES, 129 Potheringay Road, Maywell Park, Glasgow, S. 1.
1901. *CRAWFORD, The Right Hon. The EARL OF, K.T., LL.D., Balcarres, Colinsburgh, Fife.
1931. CHICHTON, GEORGE, 6 Duncan Street, Edinburgh, 9.
1932. CHICHTON, Rev. THOMAS SMITH, M.A., 182 Whitehill Street, Dennistoun, Glasgow, E. 1.
1925. *CHICHTON-STUART, The Lord COLEM, M.P., 22 Mansfield Street, London, W. 1.
1919. CROCKETT, THOMAS, M.A., D.Litt., 15 Langside Crescent, Southgate, London, N. 14.
1932. CROOKS, E. E., F.C.I.I. (no address).
1932. CROOKS, WILLIAM M., J.P., Arduene, Durham Street, Monifieth.
1937. CROOKSHANK, Colonel CHICHESTER DE WINDY, D.L., J.P., F.S.A., Johnstounburn, Humber, East Lothian.
1932. CROSOVYK, Rev. J. PRINGLE, M.A., Minister of St Colmac's and St Ninian's, The Manse, 32 Marine Place, Rothesay, Bute.
1938. CROSGROVE, THOMAS TORRANCE, Woodlands, 9 Tinto Road, Newlands, Glasgow, S. 3.
1925. *CROSS, A. ROBERTSON, M.C., B.A., LL.B., 11 Kirklee Terrace, Glasgow, W. 2.
1937. CROOKS, STEWART H., 93 Baroncourt Terrace, Edinburgh, 8.
1924. CRICKSHANK, JAMES, Westwood, Bucksburn, Aberdeenshire.
1924. CULLEN, ALEXANDER, Lieut.-Colonel, T.D., F.R.I.B.A., F.S.I., 92 Cadzow Street, Hamilton.
1922. CULLEN, WILLIAM JOHNSTON, 7 Howard Street, Edinburgh, 4.
1932. CUMMING, ALEXANDER, B.A., M.B., Ch.B., F.R.C.S. Edin., 103 Dominion Road, S. 2, Auckland, New Zealand.
1907. CUMMING, ALEXANDER D., Headmaster, Public School, Callander.
1927. CUMMING, VICTOR JAMES, 8 Grosvenor Terrace, Glasgow, W. 2.
1934. CUNNINGHAM, JOHN RICHARD, I.C.S. (Retired), Askaniil End, Campbeltown, Argyll.
1893. CUNNINGTON, Captain B. HOWARD, 33 Long Street, Devizes, Wiltshire.
1893. *CURLIE, ALEXANDER O., C.V.O., LL.D., F.S.A., Ormsacre, Barnton Avenue, Davidson's Mains, Edinburgh, 4, — *Vice-President*.
1933. CURLIE, ALEXANDER TASCRED, M.B.E., Kasulu, (in Kilgoma, Tanganyika Territory).
1931. CURLIE, Mrs ALEXANDER T., Little Tigh, Seal Chart, Sevenoaks, Kent.
1889. *CURLIE, JAMES, LL.D., F.S.A., St Cuthberts, Melrose, — *Curator of Museum*.
1936. CUTHBERTSON, WILLIAM F., Librarian, The Public Library, Hawick. "Fairylea," 8 Wilton Hill Terrace, Hawick.
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1939. WEIR, JOHN L., M.A., 153 West Regent Street, Glasgow, C. 2.
1927. WEIR, WALTER, 18 Cathkin Road, Langside, Glasgow.
1926. WESTELL, W. PERCIVAL, F.L.S., F.H.S.A., Letchworth Public Museum, Town Square, Letchworth, Herts.
1932. WESTON, PERCY WILLIAM, F.R.E.S., F.R.G.S., F.H.H.S., F.C.S., F.Z.S., Villa Chappott, Tangier, Morocco.
1937. WESTWATER, ALEXANDER, Publisher, Station Road, Lochgelly, Fife.
1925. WHITE, WILLIAM, 25 Shore Road, Anstruther, Fife.
1928. WHITEHEAD, Rev. HENRY A., High Church Manse, 2 Brighton Terrace, Craigmare, Rothesay, Bute.
1909. WHITTAKER, CHARLES RICHARD, F.R.C.S., F.H.S.E., Lynwood, 27 Hatton Place, Edinburgh, 9.
1937. WHITMAN, A. STUART, F.H.A.I., F.Z.S., Melville Gardens, Bishopbriggs, Glasgow.
1897. WILLIAMS, H. MALLAM, J.P., Tilehurst, 31 Southern Road, West Southbourne, Bournemouth, Hants.
1930. WILSON, ARTHUR, J.P., 6 Saltoun Gardens, Glasgow, W. 2.
1936. WILSON, ARTHUR W., "Hannendale," Venturefair Avenue, Dunfermline.
1933. WILSON, DAVID, A.R.I.A.S., 15 Prospect Bank Place, Leith, Edinburgh, 6.
1929. WILSON, GEORGE VICTOR, H.M. Geological Survey, 19 Grange Terrace, Edinburgh, 9.
1933. WILSON, JAMES PEARSON, Millbank, Privick Mill, Ayr.
1934. WILSON, Major MAURICE J. H., The Queen's Own Cameron Highlanders, Ashmore, Bridge of Cally, Perthshire.
1932. WILSON, P. DOUGLAS, M.Inst.C.E., 78 Coniston Drive, Edinburgh, 10.
- 1927.*WILSON, ROBERT, 139 Princes Street, Edinburgh, 2.
- 1923.*WILSON, Rev. S. GORDON F., M.A., B.Litt., A.K.C., F.R.Hist.S., Illean Vicarage, near Canterbury, Kent.
1913. WILSON, Rev. THOMAS, B.D., D.D., Flat 5, Meyrick Park Mansions, Bodongan Road, Bournemouth.
1920. WISHART, DAVID, Pittairrow, Abernethy, Perthshire.
- 1934.*WISHART, FREDERICK, 632 King Street, Aberdeen.
1929. WOLFENDEN, WILLIAM, J.P., Chivy Villa, Kingswade, Inverness-shire.
1930. WOOD, WILLIAM HENRY, Missioner to the Deaf, 15 Kilburn, East Newport, Fife.
1930. WRIGHT, ALEXANDER, L.R.I.B.A. (no address).
1938. WRIGHT, Rev. RONALD SELBY, M.A., The Manse of the Canongate, Edinburgh, 8.
1927. WRIGHT, Rev. WILLIAM, M.A., B.D., Minister of the Parish of Wardlawhill, 21 Chmearthill, Rutherglen.
1925. WYNESS, J. FENTON, A.R.I.B.A., A.I.Archts.Scot., 45 Salisbury Terrace, Aberdeen.
1928. YATES, Miss AGNES MITCHELL, B.Sc., Greenvale, Ardberg Road, Rothesay.

1937. YOUNG, Mrs H. NUGENT, 10 Ouslow Court, Drayton Gardens, London, S.W. 10.
 1933. YOUNG, ROBERT STOMER, J.P., Hon. Sheriff-Substitute of Fife and Kinross.
 1913. YOUNG, THOMAS E., W.S., Auchterarder.
 1931. YOUNG, T. P. W., A.R.I.B.A., 95 Bath Street, Glasgow, C. 2.
 1937. YOUNG, WILLIAM ROSS, "Dunaveagh," Barmton Avenue, Edinburgh, 1.
 1924.*YOUNGER, HARRY J., 21 Douglas Crescent, Edinburgh, 12.
 1929. YOUNGER, Mrs J. P., Arncliffe, Cambus, Clackmannanshire.
 1939.*YULE, BRIAN JOHN GEORGE, 28 Queen's Crescent, Edinburgh, 9.
 1912.*YULE, THOMAS, W.S., 16 East Claremont Street, Edinburgh, 7.

CORRESPONDING MEMBERS

1937. ANDERSON, R. W., Whitestone Knowe, Peebles.
 1923. BLACK, GEORGE F., Ph.D., 325 Watson Avenue, Lyndhurst, New Jersey, U.S.A.
 1927. BRENNER, SIMON, Mid Town, Frieswick, Cuthness.
 1928. FORTUNE, JOHN ROBERT, Airhouse, Oxtou, Berwickshire.
 1913. FRASER, JOHN, 9 Gladstone Place, Leith, Edinburgh, 6.
 1933. MANN, ALEXANDER, 22 Boyd Street, Laurieston, Falkirk.
 1915. MATHIESON, JOHN, F.R.S.E., 42 East Claremont Street, Edinburgh, 7.
 1936. MOAR, PETER, Commission Agent, 4 Thorfinn Street, Lerwick, Shetland.
 1915. MORRISON, MURDO, Lakesfield, Bragar, Lewis.
 1931. SMITH, SAMUEL, Murrills, Laureston, near Falkirk.
 1930. TAIT, DAVID, 11 Glendevon Place, Edinburgh, 12.
 1933. YORSTON, JAMES, Yoville, Rousay, Orkney.

HONORARY FELLOWS

1897. Sir W. M. FLINDERS PETRIE, D.C.L., LL.D., F.R.A., F.R.S., Emeritus Professor of Egyptology in University College, London, W.C. 1.
 1908. Sir ARTHUR JOHN EVANS, M.A., D.C.L., Youlbury, near Oxford.
 Professor H. DRAGENDORFF, Freiburg i. Baden, Johan von Weirhstrasse 4.
 1923. M. L'Abbé H. BREUIL, D.L.C., Professeur au Collège de France et à l'Institut de Paléontologie Humaine, Paris, 52 Avenue de la Motte Piquet, Paris, XV.
 Professor FRANZ CUMONT, 10 Corso d'Italia, Rome.
 Sir G. F. HILL, K.C.H., M.A., LL.D., F.B.A., Litt.D., F.S.A., 12 Sussex Place, Regent's Park, London, N.W. 1.
 FRANK GERALD SIMPSON, M.A., 44 Brampton Road, Carlisle.
 Mrs ARTHUR STRONG, C.R.E., Litt.D., LL.D., F.S.A., Life-Fellow of Girton College, Cambridge, and Assistant Director of the British School at Rome, 35 Via Balbo, Rome (22).
 A. M. TILLOREN, Professor Universitetet, Helsingfors, Finland.
 1926. MARCELLIN BOULE, Professor in the Muséum National d'Histoire Naturelle, and Director of the Institut de Paléontologie Humaine, 1 rue René Panhard, boulevard Saint-Marcel, Paris 13.
 Professor Dr philos. A. W. BUGGGER, Bestyrer av Universitetets Oldsaksamling, Tullinløkken, Oslo, Norway.
 O. M. DALTON, M.A., F.B.A., Uplands, Bathwick Hill, Bath.
 Professor Dr ERNST FABRICIUS, Geheimer Rat, Goethestrasse 41, Freiburg im Breisgau, Germany.
 Sir ARTHUR KEITH, M.D., D.Sc., LL.D., F.R.C.S. (Eng.), F.R.S., Conservator of the Museum and Hunterian Professor, Royal College of Surgeons of England; Past-President of the Royal Anthropological Institute of Great Britain and Ireland, and of the Anatomical Society.
 Master of the Buckton Browne Farm, Downe, Farnborough, Kent.
 Dr R. PARIBENI, Director of the Institute of Archaeology of Rome, Museo Nazionale Romano, Rome.

1927. DON HERMILIO ALCALDE DEL RIO, Torrelavega, Santander, Spain.
1931. Mrs M. E. CUNNINGTON, 33 Long Street, Devizes, Wiltshire.
Professor Dr ROBERT ZAHN, Director bei den Staatlichen Museen, Honorar-professor an der Universität, Am Lustgarten, Berlin, C.2.
1933. Professor Dr philos. HAAKON SHRETELIO, Bergens Museums Oldsamlng, Bergen, Norway.
1935. Professor GERHARD BERSU, Zentralkdirektion des Archäologischen Instituts des Deutschen Reiches, Woytschstr. 30 c., Berlin, W. 35.
1939. Professor Dr ANDREAS ALFÖLDI, Pázmány-Universität, Múzeum-Korut 6-8, Budapest, VIII.

LADY ASSOCIATE

1900. Professor Emeritus M. A. MURRAY, 18 Regents Terrace, Cambridge.

SOCIETIES, INSTITUTIONS, &c., EXCHANGING PUBLICATIONS.

- | | |
|---|--|
| Architectural, Archaeological, and Historic Society of Chester and North Wales. | Royal Archaeological Institute of Great Britain and Ireland. |
| Belfast Natural History and Philosophical Society. | Royal Commission on Ancient and Historical Monuments of Scotland. |
| Berwickshire Naturalists' Club. | Royal Commission on the Ancient and Historical Monuments and Constructions in Wales and Monmouthshire. |
| Bristol and Gloucestershire Archaeological Society. | Royal Historical Society. |
| Buchan Club. | Royal Institute of British Architects, London. |
| Buteshire Natural History Society. | Royal Irish Academy. |
| Cambrian Archaeological Association. | Royal Numismatic Society. |
| Cambridge Antiquarian Society. | Royal Society of Antiquaries of Ireland. |
| Cardiganshire Antiquarian Society. | Scottish Ecclesiological Society. |
| Courtauld Institute of Art. | Shropshire Archaeological Society. |
| Cumberland and Westmorland Antiquarian and Archaeological Society. | Society for the Promotion of Roman Studies. |
| Derbyshire Archaeological Society. | Society of Antiquaries of London. |
| Dumfriesshire Natural History and Antiquarian Society. | Society of Antiquaries of Newcastle-upon-Tyne. |
| Edinburgh Architectural Association. | Somersetshire Archaeological and Natural History Society. |
| Edinburgh Geological Society. | Stirling Natural History and Archaeological Society. |
| Elgin Literary and Scientific Society. | Surrey Archaeological Society. |
| Essex Archaeological Society. | Sussex Archaeological Society. |
| Gaelic Society of Inverness. | Third Spalding Club. |
| Glasgow Archaeological Society. | Thoresby Society. |
| Hampshire Field Club and Archaeological Society. | Viking Society for Northern Research. |
| Hawick Archaeological Society. | Wiltshire Archaeological Society. |
| Historic Society of Lancashire and Cheshire. | Yorkshire Archaeological Society. |
| Institute of Archaeology, Liverpool. | |
| Kent Archaeological Society. | |
| Orkney Antiquarian Society, Kirkwall. | |
| Perthshire Society of Natural Science. | |
| Powys-land Club. | |
| Royal Anthropological Institute. | Archaeological Survey of India. |
| | British School at Rome. |

Colombo Museum, Ceylon.
 Royal Canadian Institute, Toronto.
 Royal Ontario Museum of Archaeology, Toronto, 5,
 Canada.
 University Museum, Dunedin, New Zealand.

FOREIGN SOCIETIES, UNIVERSITIES,
 MUSEUMS, &c.

Académie des Inscriptions et Belles Lettres, Paris.
 Académie des Sciences, Leningrad, U.S.S.R.
 Académie des Sciences d'Ukraine, Kieff.
 Académie Royale Serbe, Belgrade.
 Administration des Monuments, Riga, Latvia.
 Anthropologische Gesellschaft, Vienna, Osmark,
 Germany.
 Antiquarische Gesellschaft, Zürich.
 Archaeological Institute of the Imperial University
 of Kyoto, Japan.
 Archaeologisches Institut D. Kön. Ung. Franz
 Joseph-Universität, Szeged, Hungary.
 Archaeologisches Institut der Pázmány Universität,
 Budapest.
 Archäologisches Institut des Deutschen Reiches
 Römisch-Germanische Kommission, Frankfurt
 am Main.
 Associació Catalana d'Antropologia, Etnologia i
 Prehistòria, Barcelona Universität, Spain.
 Bosnisch-Herzegovinische Landes-Museum, Sara
 jevo, Jugoslavia.
 Bureau of Ethnology, Washington.
 California University in Berkeley.
 Commissione Archeologica Comunale di Roma.
 Cornell University Library, Ithaca, New York.
 Čsl. státní archeologický ústav (Institut archéolo-
 gique de l'État tchécoslovaque) Praha, Re-
 publika československá, Czechoslovakia.
 Department of Antiquities in Palestine, Jerusalem.
 Deutsch-ausländischer Buchtatsch, Berlin.
 Ecole d'Anthropologie de Paris.
 Faculté des Sciences de Lyon.
 Field Museum of Natural History, Chicago.
 Foreningen til Norske Fortidsmindesterkers
 Bevaring.
 Göteborg och Bohuslän's Fornminnesföreningen.
 Göttingen University.
 Historische und Antiquarische Gesellschaft, Basel.
 Historischer Verein für Niedersachsen.
 Institut Archéologique Bulgare, Sofia.
 Institut de Paléontologie Humaine, Paris.
 Istituto Italiano di Antropologia, Rome.

Junta Para Ampliación de Estudios—Comisión de
 Investigaciones Paleontológicas y Prehistóricas,
 Madrid.
 Junta Superior de Excavaciones y Antigüedades,
 Madrid.
 Kiel University.
 Kongelige Norske Videnskabers Selskab, Trondhjem.
 Landesanstalt für Volksheitskunde, Halle a Saale,
 Saxony.
 Landesmuseum, Hannover.
 Landesmuseum Nassaulscher Altertümer zu Wies-
 baden.
 Leipzig University.
 Musée Archéologique Erasme Majewski de la Société
 des Sciences de Varsovie, Poland.
 Musée d'Art et d'Histoire, Geneva, Switzerland.
 Musée Gnimet, Paris.
 Musée National Suisse à Zurich.
 Museum, Bergen, Norway.
 Museum of Northern Antiquities, Oslo.
 National Bohemian Museum, Prague, Czechoslovakia.
 National Museum, Zagreb, Yugoslavia.
 Nordiska Museet, Stockholm.
 Norsk Folkemuseum, Oslo, Norway.
 Oslo University, Norway.
 Peabody Museum, Cambridge, Mass., U.S.A.
 Prähistorische Kommission der Akademie der
 Wissenschaften in Wien, Osmark, Germany.
 Prussia-Museum, Königsberg (P).
 Reale Accademia Nazionale dei Lincei, Rome.
 Rhein, Landesmuseum, Trier.
 Rijks-Museum van Oudheden, Leiden.
 Römisch-Germanischen Zentral Museum, Mainz,
 Germany.
 Royal Academy of History and Antiquities
 Stockholm.
 Royal Society of Northern Antiquaries, Copenhagen.
 Schlossischer Altertumsverein, Breslau.
 Smithsonian Institution, Washington, U.S.A.
 Société d'Anthropologie de Paris.
 Société des Antiquaires de l'Ouest.
 Société Archéologique du Midi de la France.
 Société Archéologique de Montpellier.
 Société Archéologique de Moravie.
 Société Archéologique de Namur.
 Société des Bollandistes, Brussels.
 Société Finlandaise d'Archéologie, Helsingfors.
 Société d'Histoire et d'Archéologie de Gand.
 Société Nationale des Antiquaires de France.
 Société Préhistorique Française, Paris.
 Société Préhistorique Polonaise.

Société Royale d'Archéologie, Bruxelles.
 Stadisches Museum für Volkerkunde, Leipzig.
 Stavanger Museum, Stavanger, Norway.
 Türk Tarih Kurumu, Ankara, Turkey.
 University Library, Lund, Sweden.
 University Library, Tartu, Esthonia.
 Upaala University.
 Verein für Nassauische Alterthumskunde, Wiesbaden.
 Verein von Alterthumsfreunden im Rheinlande, Bonn.
 Wiener Præhistorische Gesellschaft, Ostmark, Germany.

PERIODICALS.

L'Anthropologie, Paris.
Bulletin archéologique polonais, Warsaw.

LIBRARIES, BRITISH.

Athenæum Club Library, London.
 Baillie's Institution, Glasgow.
 Bodleian Library, Oxford.
 British Museum Library.
 Chetham's Library, Manchester.
 Church of Scotland College Library, The Mound, Edinburgh.
 Free Library, Edinburgh.
 Free Library, Liverpool.
 Mitchell Library, Glasgow.

SUBSCRIBING LIBRARIES, ETC.

American Philosophical Society.
 Ashmolean Museum, Oxford.
 Birmingham Public Libraries—Reference Library.
 Carnegie United Kingdom Trust—The Scottish Central Library for Students, Dunfermline.
 Chicago University Libraries, Chicago, U.S.A.
 Cleveland Public Library, Ohio, U.S.A.
 *Columbia University.
 Department of British and Mediæval Antiquities, British Museum.
 Detroit Public Library, Detroit, U.S.A.
 Dr Hay Fleming Library, The University, St Andrews.
 *Faculty of Procurators' Library, Glasgow.
 Falkirk Archaeological and Natural History Society.
 Free Public Library, Boston, Massachusetts, U.S.A.
 Harvard College, U.S.A.
 Henry E. Huntington Library and Art Gallery, San Marino, California, U.S.A.
 Institute of Accountants and Actuaries in Glasgow.
 Jesus College, Oxford.
 John Rylands Library, Manchester.

National Library of Scotland, Edinburgh.
 National Library of Wales, Aberystwyth.
 Ordnance Survey Library, Southampton.
 Public Record Office Library, London.
 Royal Library, Windsor.
 Royal Scottish Museum Library, Edinburgh.
 Scottish National Portrait Gallery Library.
 Scottish Record Office, Historical Department.
 Signet Library, Edinburgh.
 Trinity College Library, Dublin.
 University Library, Aberdeen.
 University Library, Cambridge.
 University Library, Edinburgh.
 University Library, Glasgow.
 University Library, St Andrews.
 Victoria and Albert Museum Library, London.

LIBRARIES, FOREIGN.

Bayerische Staatsbibliothek, Munich, Bavaria.
 Bibliothèque d'Art et d'Archéologie, Université de Paris.
 National Library, Paris.
 National Library, Vienna.
 Newberry Library, Chicago, U.S.A.
 Preussische Staatsbibliothek, Berlin.
 Public Library, Hamburg.
 Royal Library, Copenhagen.
 Royal Library, Stockholm.
 Sächsische Landesbibliothek, Dresden.

Metropolitan Museum of Art, New York, U.S.A.
 National Museum of Wales, Cardiff.
 New York Public Library, New York.
 Pennsylvania Historical Society, Philadelphia, U.S.A.
 Public Library, Aberdeen.
 Public Library, Dundee.
 Public Library of Victoria, Melbourne, Australia.
 Reform Club, Pall Mall, London, S.W. 1.
 State Historical Society of Wisconsin, Madison, Wisconsin, U.S.A.
 *Stornoway Public Library, Island of Lewis.
 University College, Dublin.
 University Library, Durham.
 University Library, Leeds.
 University of London, W.C. 1.
 University of Michigan, Ann Arbor.
 University of Minnesota, U.S.A.
 University of Pennsylvania, Philadelphia, Pa., U.S.A.
 Victoria University of Manchester.
 Yale University Library, New Haven, Connecticut, U.S.A.

PROCEEDINGS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND

HUNDRED AND FIFTY-NINTH SESSION, 1938-1939

ANNIVERSARY MEETING, 30th November 1938.

PROFESSOR THOMAS H. BRYCE, M.A., M.D., LL.D., F.R.S.,
Vice-President, in the Chair.

An apology for absence was intimated from Sir George Macdonald.

William K. Dickson, LL.D., and Thomas Yule, W.S., were appointed Scrutineers of the Ballot for Office-Bearers.

The Ballot having been concluded, the Scrutineers found and declared the List of the Council for the ensuing year to be as follows:—

President.

Sir GEORGE MACDONALD, K.C.B., LL.D., D.Litt., F.B.A.

Vice-Presidents.

Professor T. H. BRYCE, M.D., LL.D., F.R.S.
The Hon. Lord ST VIGEANS, LL.D.
ALEXANDER O. CURLE, C.V.O., LL.D.

Councillors.

Rev. WILLIAM BURNETT, B.D.
W. G. C. HANNA, O.B.E., C.A.
W. DOUGLAS SIMPSON, D.Litt.
Sheriff C. H. BROWN, K.C.
WILLIAM ANGUS.

WILLIAM K. DICKSON, LL.D.
THOMAS YULE, W.S.
DAVID BAIRD SMITH, C.B.E., LL.D.
Professor D. TALBOT RICE, M.A.,
B.Sc.

Secretaries.

DOUGLAS P. MACLAGAN, W.S. | ANGUS GRAHAM, M.A.

For Foreign Correspondence.

Professor V. GORDON CHILDE, D.Litt., | Professor W. M. CALDER, M.A., LL.D.,
D.Sc. | F.B.A.

Treasurer.

J. BOLAM JOHNSON, C.A.

Curators of the Museum.

JAMES CURLE, LL.D., W.S. | JAMES S. RICHARDSON.

Curator of Coins.

ROBERT KERR, M.A.

Librarian.

MARRYAT R. DOBIE, B.A.(Oxon.).

Councillors ex-officio.

The Hon. Sir HEW H. DALRYMPLE, K.C.V.O., } *Representing the Board of*
KENNETH SANDERSON, W.S., } *Trustees.*
JOHN A. INGLIS, K.C. *Representing the Treasury.*

A Ballot having been taken, the following were elected Fellows: James Carson, M.B.E., F.E.I.S.; Major Alan Gomme Duncan, M.C.; Andrew B. Flett, M.B., Ch.B.; J. Muir Haddow; G. P. Henderson, M.A., B.A.(Oxon.); Cunthbert King, I.C.S.; John R. Lockie; John Drewett Lyford-Pike, M.A.; Charles Thorpe McInnes; James Mathew; George A. G. Mitchell, M.B., Ch.M.; Stuart Piggott; Francis John Robertson, J.P.; Miss Agnes Aitken Yates, B.Sc.

The Secretary read the list of Members deceased since the last Annual Meeting:—

Honorary Fellow : Monsieur le Professeur René Cagnat.

Fellows : The Most Hon. The Marquess of Ailsa; Richard Ainsworth; Lieut.-Colonel William Anstruther-Gray; John Asher; Rev. William Bernard Atherton, B.A.; J. Malcolm Bulloch, M.A., LL.D.; Rev. Thomas Burns, C.B.E., D.D., T.D., F.R.S.E.; J. Graham Cullander, LL.D., Director of the National Museum of Antiquities of Scotland; John M. Corrie, Archaeologist to the Royal Commission on Ancient and Historical Monuments of Scotland; Robert Cross; Alexander S. Cunningham, M.D.; Rev. Ewen Fraser; William Robert Gourlay, C.S.I., C.I.E., Knight of Grace of the Order of St John of Jerusalem; Francis Greig; Rev. Canon Thomas Hannan, M.A.; John A. Holms; Sir Reginald F. Johnston, K.C.M.G., C.B.E., M.A.(Oxon.), LL.D.(Hongkong), Sir William C. Johnston, LL.D., W.S.; Robert M. Kater; Alexander Burgess Kennedy; Miss Dorothy Mary Liddell; Hugh MacCorquodale; Captain Elliot M. S. McKirdy, M.A.(Oxon.); William Strachan Malloch; J. A. S. Miller, M.V.O., W.S.; P. Keith Murray, W.S.; James S. Nicoll; Arthur F. Balfour Paul, F.R.I.B.A.; Alexander L.

Dick Peddie, W.S.; The Right Rev. Edward S. Reid, M.A., D.D., Bishop of St Andrews; Robert Burns Robertson, M.V.O.; Thomas Snellie, Architect; John Smith; James Steuart, O.B.E., W.S.; T. Walker-Love, M.B.; Alexander Whitelaw.

The Meeting resolved to record their sense of the loss the Society had sustained in the death of these Members.

The Secretary read the following Report by the Council on the affairs of the Society:—

The Council beg to submit to the Fellows of the Society their Report for the year ending 30th November 1938.

<i>Fellowship.</i> —The total number of Fellows on the roll at	
30th November 1937 was	1025
At 30th November 1938 the number was	1018
being a decrease of	7

The number of new Fellows added to the roll during the year was 53, while 36 died, 13 resigned, and 11 allowed their membership to lapse.

It is with very great regret that we have to record the loss which the Society has sustained through the death of Mr J. Graham Callander, LL.D., Director of the Museum since 1919. An appreciation of his work and services to Archaeology was made at the meeting in April last. Two former Members of Council, Colonel Anstruther-Gray and Mr Robert Cross, will also be missed. Colonel Anstruther-Gray was first elected to the Council in 1921, and became a Vice-President in 1923; he was re-elected to the Council in 1926, again became a Vice-President in 1927, and in 1931 began his last term of office as a Councillor. Mr Robert Cross served on the Council from 1924–1927. We have further to record the death of an Honorary Fellow, Professor René Cagnat, Secrétaire Perpétuel de l'Académie des Inscriptions et Belles Lettres, who gave to our Library copies of several of his works, including *Revue des Publications Epigraphiques à l'Antiquité Romaine*, Paris, 1889; *Cours d'Epigraphie Latine*, Paris, 1898; *L'Armée Romaine d'Afrique et l'Occupation Militaire de l'Afrique sous les Empereurs*, Paris, 1892.

Proceedings.—An advance copy of *The Proceedings* lies upon the table. Twenty papers were read during the session, of which 11 dealt with pre-historic subjects and 9 with historic subjects. The Society is indebted to Mr Walter G. Grant for having most generously provided the coloured plates which illustrate the paper "The Armorial de Berry."

The Museum.—The number of objects received during the year was 1640 by donation and 206 by purchase.

Her Majesty Queen Mary has again shown her interest in the Museum by the presentation of a bronze medal commemorating the visit made by George IV. to Edinburgh in 1822.

The larger proportion of relics acquired belong to the prehistoric period, over 700 objects, found chiefly on the Clova estate, Aberdeenshire, having been presented by Captain Hugh P. Lumsden. A number of objects from Orkney have been given by Mr Walter G. Grant, F.S.A.Scot., the most important being a neck-ring, an armlet, a flat pointed band and a pin, all of silver. These relics formed part of the magnificent silver hoard of Scandinavian origin, found at Skaill in 1858.

A number of important relics, obtained from the excavation of Stone Circles in Ayrshire, were presented by Mrs Isabella M. Christie and Mr Andrew Hamilton. A socketed iron axe, found during the excavation of Rahoy Fort, Morvern, Argyll, was given by Mrs Newton of Rahoy. Major Harry H. Hebden, M.C., has again given a collection of Neolithic Pottery from cairns at the Calf of Eday, Orkney.

Among chance finds presented to the Museum were a Beaker Urn, gifted by the Board of Agriculture for Scotland, and a Food-vessel Urn, found at Bonnyrigg, which was presented by the Town Council of Bonnyrigg and Lasswade.

Our Token Collection has been enriched by a gift of 619 Communion tokens by Mrs F. Weston, from a large collection formed by her father, the late Mr R. McVitie, Edinburgh, and by a bequest of 75 specimens by the Rev. Thomas Burns, C.B.E., D.D., F.S.A.Scot.

Important gifts to the Museum have been made by the National Art-Collections Fund, there having been presented through "the London Scot Bequest" a section of oak wall-panelling of sixteenth-century date which, until recently, formed part of the furnishings of the Castle of Killochlan, near Girvan, Ayrshire, and an early sixteenth-century Scottish claymore which is probably the oldest surviving example of its kind. This is not the first occasion on which the National Museum has been helped by the Art-Collections Fund, a recent instance being the granting of a most generous donation which enabled it to acquire the Monymusk Reliquary. It cannot be too widely known that the Fund is maintained by voluntary subscription and bequests, and is used to assist in the acquisition of important antiquities and works of art for the National Collections.

Director of the Museum.—The post of Director of the Museum has been filled by the appointment of Mr A. J. H. Edwards. Mr Edwards, who has been Assistant Keeper since 1912, has a thorough knowledge of the contents of the Museum, and has contributed a number of papers of interest and importance to *The Proceedings* of the Society.

Keeper.—Mr Robert B. K. Stevenson, M.A., has been nominated to fill

the post which became vacant through the promotion of Mr Edwards. The Lords of the Treasury have agreed that the holder of this post shall in future be styled "Keeper," instead of "Assistant Keeper."

Excavations.—The excavation of the Viking site at Freswick Bay, Caithness, has now been completed by Dr A. O. Curle. Mr Ian A. Richmond has finished his excavation of the Roman Fort at Fendoch, Perthshire, and Mr C. S. T. Calder his exploration of an early domestic site on the Calf of Eday, Orkney. Accounts of these excavations will be given to the Society during the coming session.

Grants have also been given to Dr W. Douglas Simpson for excavations at Esslemont Castle and Kildrummy Castle. The results obtained will form the subjects of future communications.

A Report of further excavations carried out at Birrens during the years 1936-37 has been communicated to the Society by Mr Eric Birley and has appeared in *The Proceedings*, Volume LXXII.

The Library.—The additions to the Library amounted to 149 volumes, of which 112 were acquired by donation and 37 by purchase. In addition, a large number of publications of learned Societies, etc., have been received by way of exchange and subscription; 149 books have been bound with the aid of the Grant made by H.M. Treasury for this purpose.

The Rhind Lectureship.—The Rhind Lectures for 1938 have been postponed until after the New Year, as Dr C. F. A. Schaeffer is still carrying on the excavations at Ras Shanura, about which he is to lecture. They will be delivered between 24th April and 5th May 1939. The dates for delivery of Professor Haakon Shetelig's course for 1939, on "The Early Art of Scandinavia," have not yet been fixed. Dr W. C. Dickinson has agreed to give the lectures for 1940, which are to deal with legal history.

The Gunning Fellowship.—The Gunning Fellowship for 1938 was granted to Mr A. J. H. Edwards.

The Chalmers-Jervise Prize.—The district chosen for the Chalmers-Jervise Prize Essay for 1938 was Wigtownshire. No essay has been received.

NATIONAL MUSEUM OF ANTIQUITIES OF SCOTLAND,
QUEEN STREET, EDINBURGH.

The Report was adopted on the motion of the Chairman, seconded by the Hon. Lord St Vigeans, LL.D.

MONDAY, 12th December 1938.

PROFESSOR THOMAS H. BRYCE, M.D., LL.D., Vice-President,
in the Chair.

A Ballot having been taken, the following were elected Fellows: James Alasdair Clark; John Mannel Cook, B.A.; William Croft Dickinson, M.A., Ph.D., D.Lit.; John Gladstone, M.A.; Miss Phoebe A. M. Keef; Rev. Nigel J. H. MacCulloch; William Henry Morrison; Kenneth A. Steer, M.A., Ph.D.; James Ronald Teggin, M.A.

Donations to the Museum and Library, as per lists at end of volume, were intimated and thanks voted to the Donors.

Purchases for the Museum and Library, as per lists at end of volume, were announced.

The following Communications were read:—

I.

A STONE-AGE SETTLEMENT AT THE BRAES OF RINYO,
ROUSAY, ORKNEY. (FIRST REPORT.) BY PROFESSOR V. G.
CHILDE, F.S.A.Scot., AND WALTER G. GRANT, F.S.A.Scot.

Sherds and flints have frequently turned up on the lands of Bigland Farm at the foot of the Braes of Rinyo. But the settlement here described was first discovered by James Yorston, jun., an employé of Mr Grant's, engaged in prospecting under his direction during the winter of 1937-8. Following up indications afforded by slabs on edge projecting through the turf, he exposed the outlines of prehistoric dwellings, including the whole of what will hereafter be described as A and C and parts of B, D, E, and G. Recognising that the architecture and relics agreed with those discovered at Skara Brae, but that their association with sherds of a Beaker gave the new site exceptional importance, he desisted from further operations until excavations could be carried out under our continuous supervision. We began work in June 1938 and continued till the middle of July, after which date the ruins were covered over for protection. During six weeks of relatively unfavourable weather we completed the examination of chambers A, B, C, and D and brought to light a new chamber situated beneath them. The results obtained suggest that we have on Rousay a complete settlement of Beaker age or earlier, the full excavation of which may be expected to prove no less revolutionary for British prehistory than that of Köln-Lindenthal has been for Central

European. But it will require several seasons' work, so it has seemed desirable to publish at once a fairly full account of the results obtained up to date.

In the north-east corner of Rousay the land falls away in a south-westerly direction from the heights of Faraclett Head in a succession of terraces where the flagstones, bedded almost horizontally, crop out in a series of miniature precipices. The lowest of these terraces rises to 100 feet above O.D., or rather over 20 feet (in a distance of 80 feet) above the cultivated fields of Bigland Farm. The prehistoric settlement begins immediately at the foot of this steep brae, which shelters it (see fig. 1). The preservation of the buildings described below is to be attributed at least in part to the scree and hill wash from the terrace above. On the other hand, the outcrops on the brae have been quarried for building stone for centuries, and even the base of the steep declivity, though now reserved, like the moor above it, for pasture, seems not to have escaped agricultural operations. Stones of the prehistoric dwellings projected above the turf before excavation started, and several of these are heavily scored on their exposed edges. From the base of the brae the lower beds of flagstone are covered with a relatively deep deposit of soil washed in from above.

Over the area excavated this deposit, constituting the subsoil on which the village was built, slopes down, uninterrupted by rock, west-south-west at a rate of 1 in 5. But this predominantly westward slope is traversed by undulations at right angles to it, accounting for differences in level of little more than 8 feet in 15 feet from north to south (Pl. I).

Remains of human occupation have been encountered throughout the excavated area immediately above virgin soil wherever this has been reached. The pottery found in such situations comprises, like that from the lower levels at Skara Brae, both A and B wares. But, save in the trough of a south-to-north undulation, only fragments of constructions have yet been found resting on virgin soil; the bulk of the constructions exposed rest upon artificial deposits presumably accumulated before their erection.

Soundings have shown that ruins extend for a distance of 50 yards westward towards the farm buildings across a field covered this summer by a hay-crop. The area excavated during 1938, however, measures only some 30 feet from east to west and 40 feet from north to south. On the south the excavation began roughly on the crest of an undulation and followed the slope downward to a trough on the north which seems to be connected with a line of vertical fracture in the outcropping rock. On the east the boundary of the area coincided in practice with a series of rock-ledges which form the lowest step to the first terrace of the brae. The ledges are, however, only shallow, and there are traces of occupation

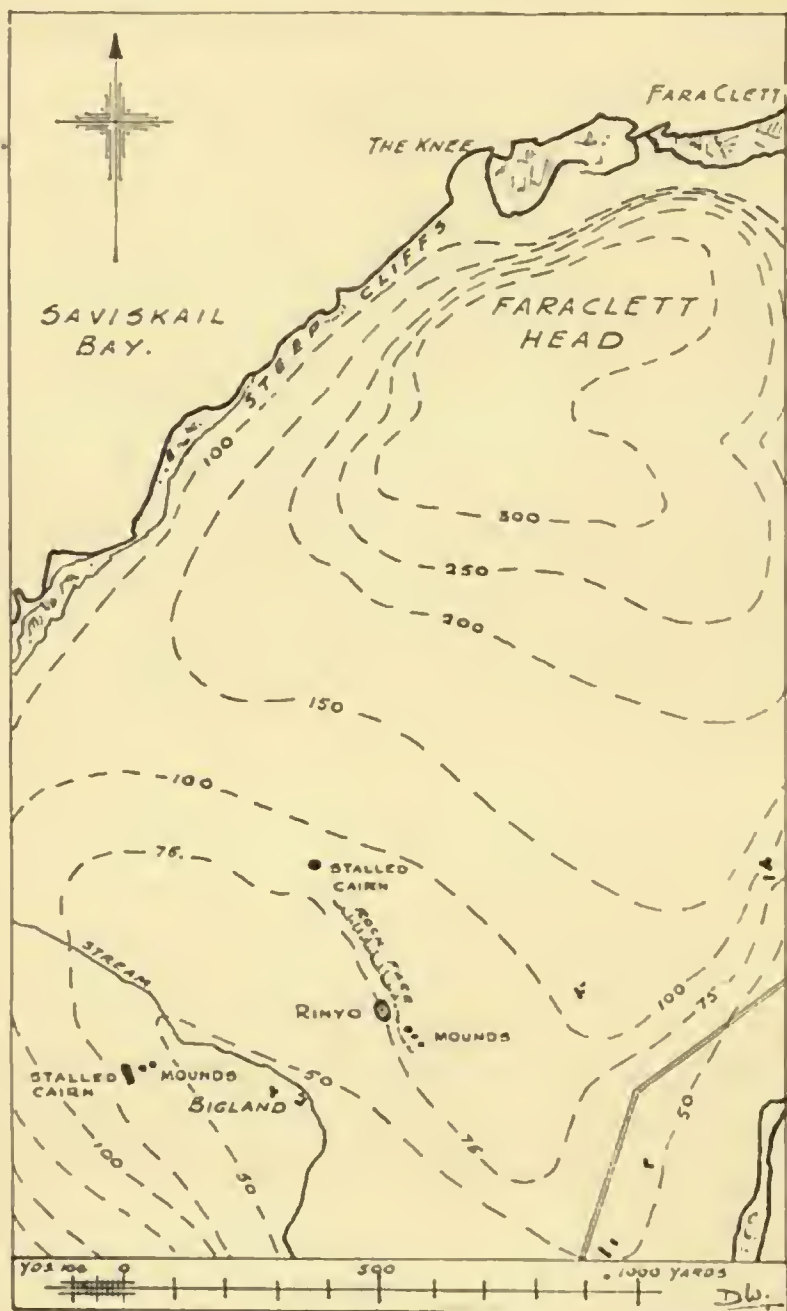


Fig. 1. The Environs of Rinyo.

even above them. East of, and above, the ledge the natural exposures of rock have been accentuated and modified to a still uncertain extent by undateable quarrying. Presumably the Rinyoans themselves initiated these operations, for the immense quantity of stone incorporated in the prehistoric houses cannot have been entirely supplied by the products of weathering. Of course the flagstone breaks so easily along bedding planes and "backs" that it could easily be quarried with stone tools. The lower chamber in the Taiverso Tuick burial mound itself provides a superb example of how skilfully admittedly "Neolithic" people could deal with the Rousay flagstone.

To make this area habitable it had to be drained and levelled. During the rains of 1938 we found that the drainage from above not only trickled down over the rocks, but also seeped out through joints in the stone. To carry off such moisture a main drain had been dug, running parallel to the rock-ledges, north and south, at least as far north as the trough of the undulation that formed the northern limit of our excavation. The unevenness of the ground-level was partly counteracted by the construction of terraces formed of midden material or of layers of horizontal slabs. On the ground thus prepared we have exposed four chambers, proved by the presence of hearths to be occupational units. Not even these four are necessarily contemporary, and some of their walls cover fragments of others which must be earlier. The chambers have been numbered A, B, C, and D, and it will be convenient to describe them in that order, reserving for subsequent discussion the question of their chronological relations (Pl. II).

Chamber A is situated just north of the crest of the undulation. The ruins of the older chamber, E, under its north wall, however, reduce the slope across A's floor in this direction to 1 in 30, but from east to west the floor is inclined as much as 1 in 7! (sections AB and CD). Without annexes chamber A is approximately a rectangle with two corners rounded, 15 feet long north-west to south-east and 11 feet wide. It is entered at its north-western end through a passage-doorway situated west of the centre of the end wall (Pl. IV, 1). Stout slabs on edge form the outer jambs. Behind them a thin slab projects edgewise from the left-hand wall to serve as cheek; no corresponding cheek survives in the opposite wall and the aperture at this point is 2 feet 3 inches wide. Beyond the cheek the door cheeks are faced with slabs on edge which are preserved to heights of 1 foot 6 inches and 1 foot 10 inches respectively above the pavement, without, however, showing holes for the bar such as pierce the similar slabs in doorways of type I at Skara Brae.

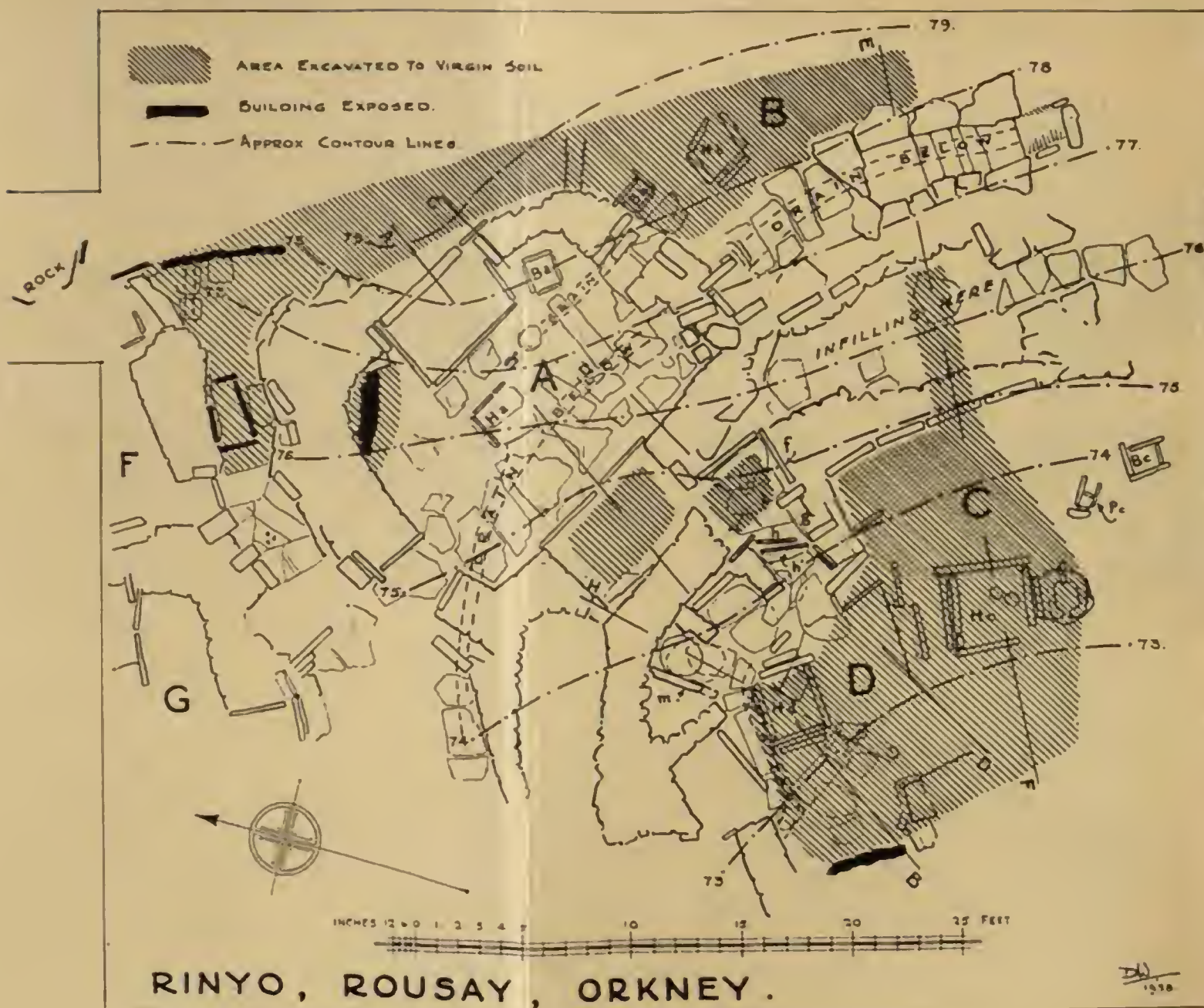
In the chamber's side walls are bed enclosures demarcated by slabs on edge precisely as at Skara Brae. That on the left (Pl. IV, 2) projects into the chamber in the manner normal on the Mainland though it is also recessed into the side wall to a depth of 1 foot. The back wall of this

bed is formed of a single slab of slaty stone over 2 feet 6 inches high, which has been pushed forward by the weight of earth behind it so that its upper edge now overhangs 8 inches. The right-hand bed is recessed into the south-west wall, as in chamber 9 at Skara Brae, and is separated from the main chamber by two slabs in line with the wall, respectively 1 foot 8 inches and 8 inches high.

In the east corner a small tank (limpet box), walled, floored, and covered with carefully trimmed rectangular "slates," has been let into the floor. The lid was actually found in position, but the receptacle contained nothing but earth and midden material that had filtered in under the lid. East of the centre of the rear wall a door at some period led into chamber B. The doorway is flanked on the left by a stout block rising 1 foot 10 inches above the pavement, and on the right by a masonry pier of which three courses alone survive to a height of 1 foot. The line of the left cheek is continued by two courses of masonry, but the masonry on the right-hand wall is interrupted by a slab on edge, now terribly decayed and tilted out of the vertical, which may once have projected to form a cheek. The doorway was paved throughout its length with a drain running under the pavement on the left-hand side. The door was found blocked up loosely with horizontal slabs as if it had gone out of use while chamber A was still occupied.

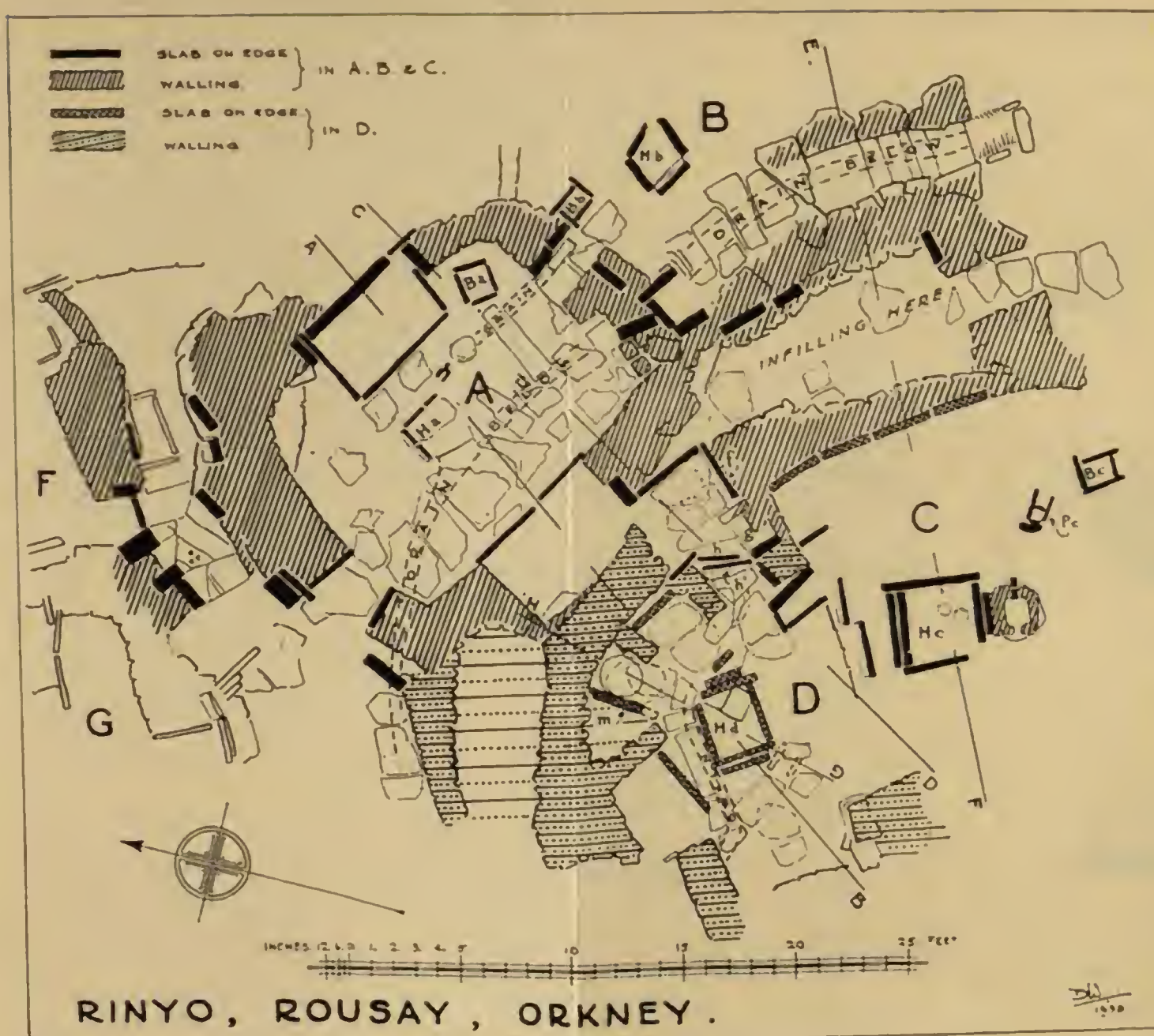
Beyond the pier flanking the communication door on the right is a recess about 1 foot deep occupying the whole south corner of the chamber. In the middle of its rear wall stands a block on edge, $1\frac{3}{4}$ foot high but tilted westward owing to the collapse of the drain lintels. It recalls the piers supporting dressers at Skara Brae. The south corner of the recess was occupied by a masonry pier three courses high, not bonded into the chamber walls. The south-west wall was found to run on behind this pier to abut on a very stout block on edge in the south-east wall that might also have been connected with a dresser.

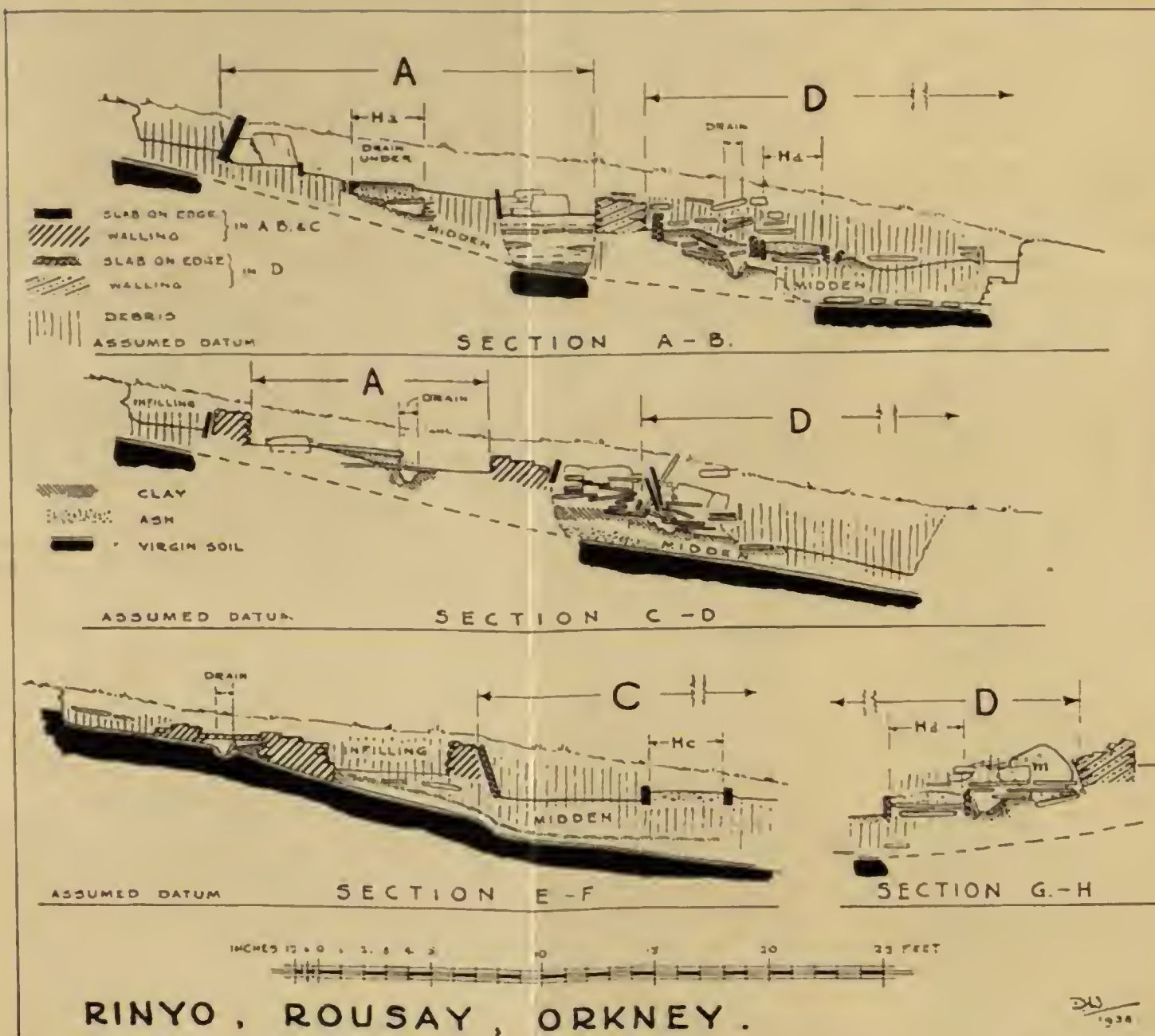
From the left-hand cheek of the main door to the corresponding cheek of the rear communication door the eastern wall of chamber A forms a unit with carefully rounded corners. It is preserved to a height of 1 foot 8 inches or four courses of masonry on the north-west, but is badly broken down from the north corner and stands only 7 inches high in the east corner. West of the door the south-east end wall again seems unitary apart from the pier added in the corner. The south-west wall stands only two or three courses high south of the bed-recess. It then turns round to form the end wall of the recess, but is not bonded into the latter's rear wall. Instead there is a gap, the south-west or rear wall of the bed being formed for the most part of the outer face of the wall of chamber D, partially reconstructed and only roughly bonded into the north-west end wall of the bed at the north corner (Pl. V, 1). This end wall then turns



V. G. CHILDE and WALTER G. GRANT.

PLATE I.
[To face page 10.]





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round to continue the south-west wall of the chamber, till at the west corner, which is not rounded, it bonds into the north-west wall. This stands 1 foot 5 inches high at the corner.

The whole floor of the chamber was covered with a layer of clay some 2 inches thick upon which most of the relics lay. It entirely masked the central fireplace, the position of which was only indicated at this stage by a patch of red ash and baked clay. Behind this patch lay a slab over 4 feet long, evidently fallen, which recalled the taller pillar stone found fallen in a similar position in chamber 7 at Skara Brae. On removing the clay and fallen slabs other articles of furniture and some stone paving were exposed.

The central hearth, placed just as at Skara Brae between the two beds, was only 2 feet square (Pl. IV, 1). Only two kerbstones (on the north-east and north-west) and the decayed hearth-plate survived. Parallel to the north-east kerb two thin slabs on edge frame a narrow channel, 4 inches wide, that seems to run into an irregular hole in the clay floor near the east corner of the hearth. It was filled with softer and darker material than the rest of the midden under the floor, and may be regarded as a sump connected with the main drain by a branch channel under the hearth. About 3 feet south-east of the south corner of the hearth was a post-hole, about 3 inches across, framed by three small slabs on edge. Under the fallen "pillar slab" was an accumulation of burnt clay that may represent the squashed ruins of an oven such as was found in chamber C. About a foot to the east of this accumulation a slaty slab, hollowed out in precisely the same manner as that under the C oven, was actually discovered (Pl. V, 2). But this was embedded beneath the floor deposit, covered by another slab, and engaged beneath the floor of the "limpet box" (Pl. VI, 1). It cannot therefore have belonged to the hypothetical oven squashed by the fall of the "pillar," and really seems to have been re-used to cover the drain that runs under the communication door and beneath the floor as far as the sump at the east corner of the hearth.

The sump, as already noted, probably connected under the hearth with the main drain. The latter channel, roofed throughout with massive lintels, runs across the whole length of the chamber. Entering near the south corner of the south-east end wall, it passes just west of the hearth and runs out under the wall at the west corner. The floor of the channel is not paved and only rough masonry supports the lintels.

In clearing the chamber no large accumulation of fallen building stones was found cumbering the floor between the surviving wall stumps. Now, clearly, stones fallen from the walls would not have been removed by modern plunderers to a greater depth than the walls themselves. Hence if the masonry of the walls had once been carried higher (as at Skara

Brae) and had collapsed into the chamber, the debris must have been removed either by the Rinyonns themselves or by their immediate successors, but in any case before the ruins became grass-grown.

The description of the inner wall, given above, will have suggested that chamber A was only a part of a larger complex. This truth will be clearer from a consideration of the outer wall-face of the chamber. In fact it is only on the north that a true outer face survives, and even there it is very much dilapidated. On the right (west) of the main doorway the casing wall of chamber D abuts on the outer wall of A, but the latter's face is not carried on behind the casing wall; thereafter the chamber wall is simply one course thick, faced on the inside only and backed up against midden packing. Outside both casing and outer facing walls at their junction a solid slab on edge forms an outer jamb to the door.

A corresponding slab stands on the left of the door. Eastward of it the wall of A is faced externally for a distance of 5 feet, giving the wall a total thickness of 4 feet. But the face in question seems really to constitute one wall of a passage running between A and the complex of buildings provisionally termed chambers F and G. Behind this face another is visible (Pl. VI, 2), and its line seems to be continued by slabs on edge, now more or less displaced, as far as the chamber's north corner; such slabs were commonly used in the outer faces of walls at Skara Brae. They and the wall masonry rest on wide slab footings 82.4 feet above O.D. (Pl. XVI, 1). Beyond the corner on the east no outer face survives. Presumably the inner wall was simply backed up against a packing of midden, while the rock-ledges of the brae (p. 7) would take the place of a casing wall. On the south-east the end wall of A frankly coincides with the wall of B. On the west no recognisable outer face survives. The rear (inner) wall of the right-hand bed is itself just the outer face of the wall round chamber D for a distance of 3 feet from the bed's south corner. But it looks as if the wall of D, though going down 9 inches below the bed's floor (section AB), had been entirely reset for incorporation in the inner wall of A. After 3 feet there is a break in the masonry, and the remaining $3\frac{1}{2}$ feet seems formed of courses loosely added to D's wall, which was, of course, curving away from chamber A.

From chamber A one could at some period pass into chamber B through a passage 2 feet 6 inches long that has already been described. Of the chamber thus reached only a small hearth, 2 feet square, a slate box immediately to the left of the door, and a recess to the right survive (Pl. VII, 1). The only recognisable wall round B is that on the north-west, which it shares with A, and 2 feet of masonry, only two courses high, running southward from its northern corner. Two slabs on edge south-west of the hearth may mark the line of the same wall's outer face: the ledge of outcrop perhaps coincided with the corresponding north-east wall.

On the east the floor of B is virgin soil, but since the latter was sloping very steeply (section EF) several layers of slabs had to be laid down on the west to level up the floor. This pavement is supported by a terrace wall, 18 inches to 2 feet high, bounded on the south-west by a line of slabs on edge, of which only two survive. This masonry platform itself rests upon a layer of midden, only 9 inches deep, terraced upon the sloping virgin soil by the east wall of "chamber C." The main drain, already encountered under the floor of A, runs through this platform under the floor of B too. The primary channel is a trench cut in virgin soil little more than 4 inches deep and 6 to 8 inches wide in which fragmentary and doubtful traces of a lining of inclined slabs on edge survived at a few points. But this channel runs at the bottom of a built conduit nearly 2 feet wide, the masonry of which rises some 9 inches on the lower or western side and about 6 inches on the east. The built walling supports massive lintels: No. 5 measures 2 feet 6 inches by 2 feet 2 inches by 3 inches; No. 7, 1 foot 5 inches by 1 foot 10 inches by $1\frac{1}{2}$ inch; and No. 8, 2 feet by 2 feet 8 inches by 4 inches (Pl. VII, 2). North of section line EF the drain runs in a north-westerly direction, passing under the party wall between A and B at the presumed north corner of the latter chamber to carry on under the floor of A, the slope throughout being designed to ensure a discharge in that direction. Farther south, however, the drain runs nearly north and south, and from lintel 2 would discharge southward down the undulation in that direction. The massive lintels of the drain supported one or two layers of thinner slabs, mostly much decayed, which constituted the true floor of chamber B.

Upon the kerbstones round Hb, which are unusually low—only 4 to 6 inches high—lay a fallen slab of thin slaty stone, some 4 feet long, that may have formed the front of a bed. There may also have been a bed in the north corner, but the collapse of a drain lintel under its floor (Pl. VII) has distorted its plan. The north end is formed by a slab on edge against the party wall of A. Two similar slabs with a joint length of 3 feet 8 inches might have separated the bed from the main chamber. There is just a ghost of an end wall at right angles to these on the south-east, while two courses of masonry, though extending only for 2 feet, might serve at once as the rear wall of the bed and the south-west wall of the chamber.

Only a very thin deposit covered the slabs and virgin soil in the area of chamber B, but the number of flints and potsherds (including parts of restorable vessels and decorated fragments) sufficed to define the deposit as a true occupation layer.

Below and west of chamber B the midden terrace supporting its outer wall extends, more or less level, over a width of 4 to 6 feet. A few slabs, laid rather casually upon it, would suggest use as a passage did they lead anywhere. The terrace is bounded on the west by an irregular foundation

of blocks, faced only on the west and resting on the top of a line of slabs that serve as a revetment to the midden terrace. These slabs, from 2 feet to 1 foot 8 inches high, are leaning out of the vertical as much as 1 foot against the terrace they support (section EF). At the same time they form the eastern boundary of the area termed chamber C. On the south and west no boundary to this area survives. On the north a composite wall, built up against the terrace revetment, extends westward for 4 feet, but then breaks off as described below (Pl. VIII, 1).

The floor of chamber C was not marked by any regular paving nor yet by a continuous bed of clay. Pottery, stone "lids," and, above all, flint scrapers, were abundant throughout the area, but were not concentrated at any well-defined horizon. The "floor" is accordingly an arbitrary level determined only by the bases of surrounding walls and the articles of furniture to be described—a raised hearth, Hc, a stone tank, Bc, and a post-socket, Pc. The hearth, about 4 feet square, is demarcated by four kerbstones, each nearly 1 foot high. The northern or rear slab had broken and tilted forward and was supplemented by an extra kerb only 4 inches high but 7 inches wide. There was an extra kerb south of the front slab too. The hearth was filled with a tough deposit of peat-ash containing a little burnt bone and coming up to a level of 79.35 above O.D. save for a circular hole, 8 inches deep and 9 inches wide, near the south kerb. It may have been designed to hold a cooking-pot, since a pot-lid, $7\frac{1}{2}$ by $6\frac{1}{2}$ inches in diameter, lay close to its mouth (Pl. VIII, 2). No slab served as a hearth-plate under the ash bed.

Immediately south of the hearth and backed up against it was a clay oven resting on a slab of slatey stone sunk in the supposed floor of the chamber (Pls. VIII and IX). The oven had an over-all length of 2 feet at right angles to the hearth and a width of $2\frac{1}{4}$ feet. The clay walls, standing at most 9 inches high and from $4\frac{1}{2}$ to $9\frac{1}{2}$ inches thick, enclosed a perfect square with round corners of 1 foot 3 inches each way. In the middle of the east wall two stones of quadrangular section, $10\frac{1}{2}$ and 10 inches high and 3 and 5 inches thick respectively, were set on end to form a support for the clay walls. Opposite them in the west side there may have been a vent hole 4 inches wide, as over this space the baked clay wall was narrowed and reduced in height to $1\frac{1}{2}$ inch. The clay walls were so hard that they could be removed almost intact by sliding them on to thin sheets of galvanised iron, an operation skilfully performed by James Yorston. It was then seen that the slatey slab on which the oven stood had been hollowed out over precisely the area enclosed by the clay walls, so that the slab preserved a perfect negative impression of the plan of the oven's interior (fig. 2). It was at first thought that the slab had been deliberately carved; but it is possible that the heat of the oven has disintegrated a few skins of the laminated slab where it was not protected

by the clay. The discovery of similar slabs under the floor of A (Pl. V, 2) and under the wall of D has enhanced the probability of the second explanation. In any case the slab in question was very soft, and broke into many pieces when an attempt was made to raise it. It has, however, been reconstructed on a concrete bed, and the whole oven is restored in the National Museum. This is the first pre-Iron Age oven to be discovered in the British Isles, but in Central and South-eastern Europe large clay ovens are regular features in neolithic houses.

Behind, *i.e.* north of the hearth, a thin slab nearly 5 feet long, but

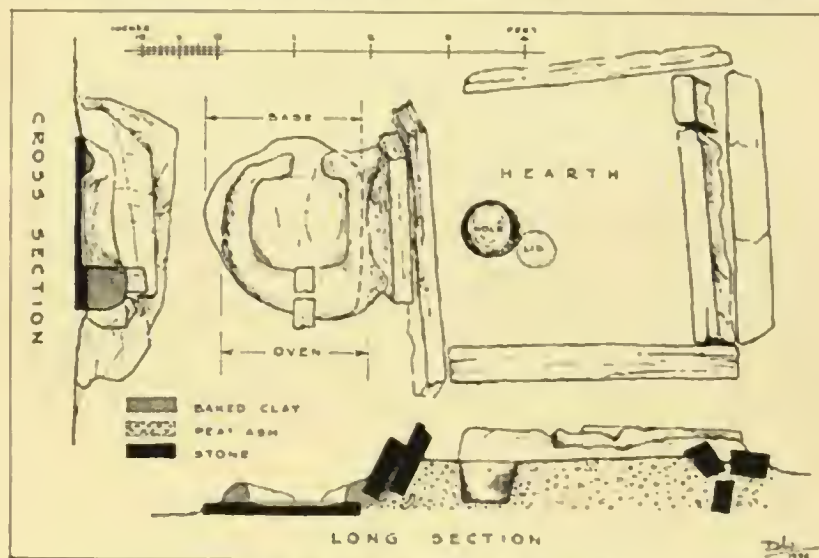


Fig. 2. Plan and Sections of Hd and Oven.

broken and tilted forward towards the hearth (Pl. IX, 1), might be taken for the frontal partition slab of a bed. At the base of this slab there is a single course of walling. If this bed really belongs to chamber C, a low thin slab at right angles to the one just mentioned would form its east end. But, save for a thin upright at the north end of the slab last mentioned, any rear wall to the supposed bed enclosure has vanished.

The north wall of C, as already indicated, is composite. In the north corner a rough strip of masonry, built up against the east revetment at right angles to it, abuts against a stout slab on edge which has slipped westward, but originally belonged to the wall of chamber D (Pl. VIII, 1). Another stout slab on edge at right angles to the foregoing and parallel to the supposed end of the "bed" may mark an original northward turn in C's wall, which would then have continued westward again behind the "bed" along a line indicated by a single thin upright that broke in half

before the photograph reproduced in Pl. IX, 2 was taken. This broken slab was all that remained of the north wall; west of it chamber C is continuous with the neighbouring chamber D. To produce this continuity, and even to make room for C at all, the south wall of D had to be removed entirely. Moreover, although the floor of chamber D is $2\frac{1}{2}$ feet lower than that of A (section AB), its western end comes up flush with the arable land's surface. Hence any western wall to D has been ploughed out.

None the less the eastern end of chamber D is exceptionally well preserved and a fireplace, bed, and drain can be recognised. The hearth (Pl. X, 1), bounded by high kerbstones, measures 2 feet 10 inches by 2 feet 5 inches. Its original base was formed by a stout slab that fitted the space between the kerbstones exceptionally well. There was a double kerb on the north and on the west, while on the east an additional kerbstone, higher than and not strictly parallel to the original one, had also been added. North-west of the hearth is a recess, now only some $4\frac{1}{4}$ feet long by $3\frac{1}{2}$ feet deep. The recess had apparently been partitioned off from the rest of the chamber by a slab on edge, $4\frac{1}{2}$ feet long and $1\frac{3}{4}$ feet high, which was actually found almost prostrate, but marks the recess as a bed (Pl. X, 1). The rear wall is distinctly concave. There is a gap at the north-west corner where the rear wall should bond into the west end-wall. The east end-wall is a pier, bonded into the rear wall. It has, however, toppled down westward; originally the pier must have been backed up against the big upright *m* projecting radially from the chamber wall, but, owing to the collapse, the end of the pier is nearly a foot out of plumb, and only the two basal courses now abut against *m*.

The slab *m* itself attains a maximum height of $2\frac{1}{4}$ feet and projects nearly 3 feet inward from the basal course of the chamber wall. Its upper edge has been trimmed to a curve and the chamber wall behind it does in fact corbel inwards along just such a curve (section GH). *M* thus forms the north-west wall of a voussoir-shaped compartment, $1\frac{3}{4}$ feet wide at the mouth, and bounded on the south by a masonry pier that projects 2 feet from the curved rear wall, into which it is bonded. This pier is one of a pair that bound another recess 2 feet 6 inches wide at the mouth and 1 foot 9 inches deep. It is paved with slaty slabs, and its back is formed of a slab on edge, 2 feet long by 1 foot 2 inches high, behind which the main chamber wall can be traced curving on as in the northerly recess. Both piers, though standing only 15 inches high, recall the supports of a dresser. Though they carry no shelf now, a broken slab found between them at 80.3 feet O.D. may be the remnant of such. Yet a third pier projects to the same line as the two just mentioned, $2\frac{3}{4}$ feet from the south corner of the second (Pl. X, 2). This third pier abuts against a slab on edge, now incorporated in the north wall of chamber C, and has been displaced together with the slab. Between piers 2 and 3 we found a



1. Chamber A, looking south-east through main doorway.



2. Chamber A, looking north.



1. Chamber A with drain exposed, looking north-west.



2. Communication door, "carved" slab and drain in Chamber A.



1. Oven-base under floor of Chamber A.



2. Door and outer wall of Chamber A, looking east.



1. Chamber B, looking north-west into Chamber A.



2. Drain under Chamber B, looking north.



1. Chamber C, looking north.



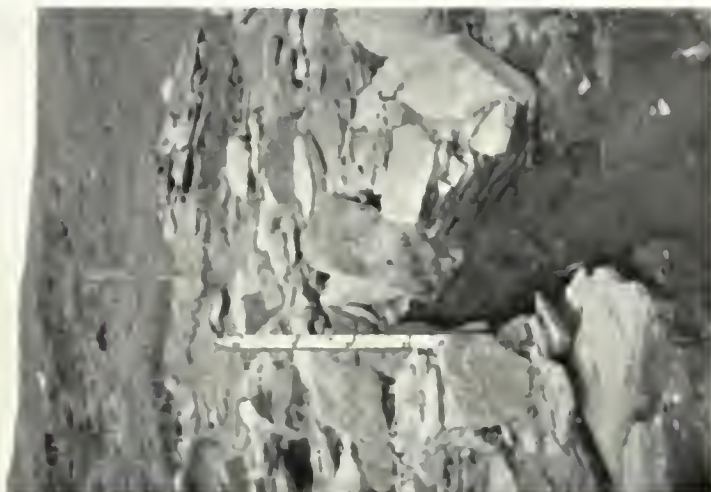
2. Hearth in Chamber C.



1. Oven and hearth in Chamber C.



2. View across north wall of Chamber C, looking into north recess of D.



2. Westermoss pier in Chamber D, after removal of paving.



1. Chamber D: Beds, drain gutters, and hearth.



1. Chamber D, looking east, showing late paving.



2. Concave face of outer wall and bed in Chamber D.



1. Chamber D: original pavement at east end.



2. Chamber D: latest pavement in north recess.



1. Uncovered drain, hearth, and recesses in Chamber D.



2. Chamber D, looking west: Drain uncovered.



1. Slab *g* fully exposed.



2. Right-hand bed of Chamber A with slabs *c f g* beyond.



1. Right-hand bed of Chamber A, looking south.



2. Slab-pile between Chambers A and D as found (looking west).



1. Outer walls round Chamber D and right-hand door-jamb of Chamber A.



2. North end of east wall of Chamber E.



2. Hearth and east wall of Chamber E.



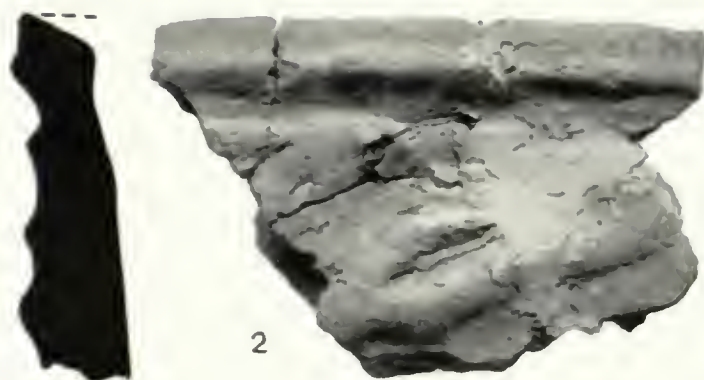
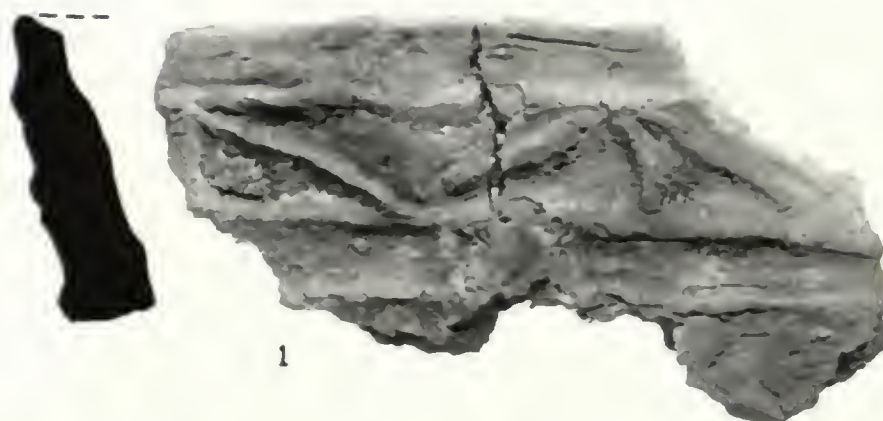
1. Hearth of Chamber E under Passage AF.



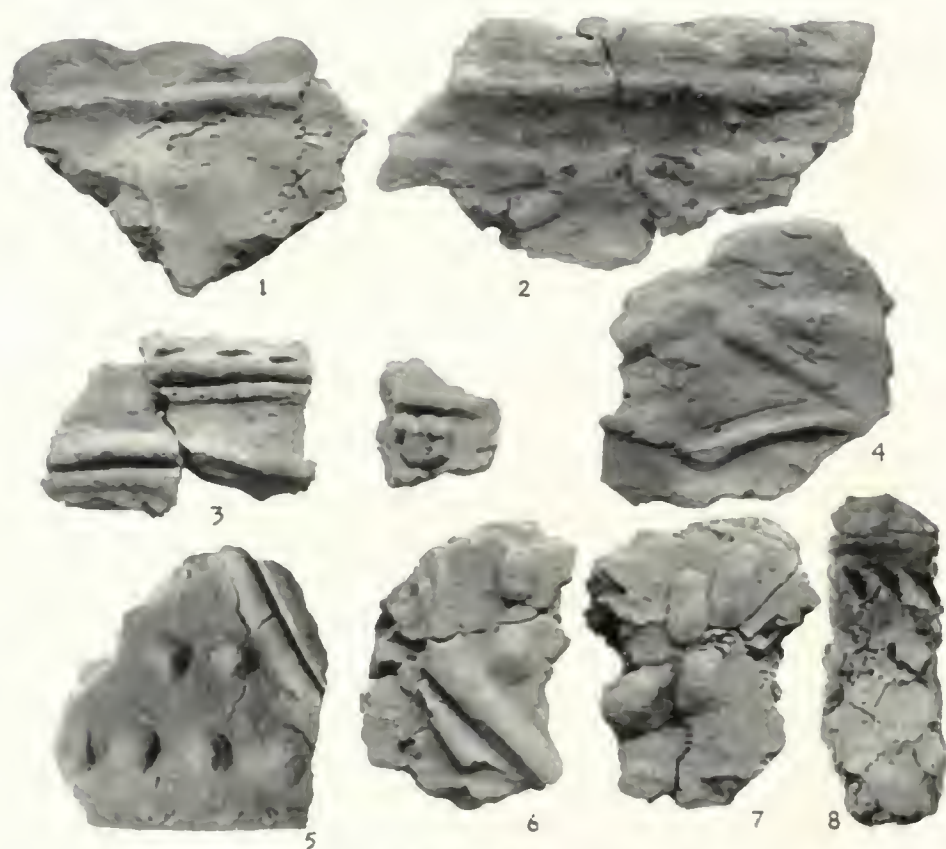
1. North corner of Chamber A, showing wall of E below Floor.



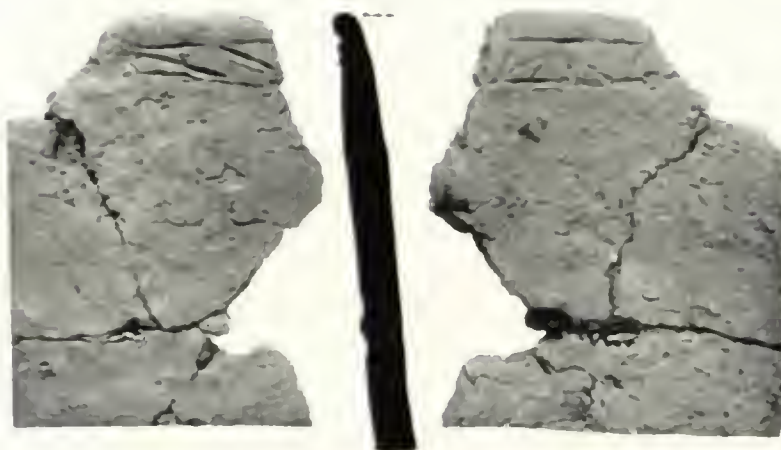
2. Slabs and wall on virgin soil below Floor of Chamber D.



Rim of A ware Vases.



A ware Shards.



A. Vase fragment from B.



B. Sherds of B ware Vase.



C and B ware.



A. Stone Balls.



B. Stone Mortar.



C. Stone Implements. (1.)

slab on edge, *h*, which, although certainly forced out of position by pressure from behind, carries on more or less the line of the slab behind the recess between piers 1 and 2. The north side of the pier seems to have been faced with a slab on edge, which was also displaced when *h* fell. All three piers might be regarded as supports for a dresser of classic form (Pl. XI, 1).

However, the main wall of the chamber seems to follow a continuous curve as far as it is preserved from the north corner of the bed to the back of the second "dresser" pier. From this point westward the masonry has been bodily torn out, leaving a ragged end behind the slab that forms the back of the second "dresser" recess. It is therefore impossible to reconstruct the plan of the chamber with any confidence. Had the curvature observed been continued into the area now occupied by chamber C, we should be confronted with something very like the Iron Age wheel-houses of the Hebrides and of Howmae—an irregularly circular enclosure divided into compartments by radial piers. In that case the analogy of the three piers east of the hearth to the dresser-supports at Skara Brae should not perhaps be pressed.

A consideration of the boundary wall itself is not unfavourable to the second interpretation. Judging by the section exposed by the ancient destruction just described the wall consisted entirely of masonry. Over an arc of chord 16 feet a rough outer face is preserved, 2 to $3\frac{1}{2}$ feet from the inner face but following much the same curvature as the latter. Behind the bed-recess, however, the outer face curves inward along an arc concave to the west and is better built than in the sections where it was convex outwards (Pl. XI, 2). This arc is indeed quite plainly designed to serve as the inner face to some structure, either another chamber or, more probably, a wall-cell which might have been entered through a hypothetical door that would have occupied the gap already noted in the north corner of the bed-recess.

The whole wall of the chamber rests on midden covered with a thin layer or film of greyish clay such as forms on the midden surface after a day's rain. Solid slab footings such as were noted under the north wall of chamber A were very rare. The outer face was rough and steeply battered. It was in fact embedded in midden. On the north a casing wall, resting on the same clay film as the main wall, had been added to support the midden packing (Pl. XVI, 1). As noted, the casing wall seems to abut against the north face of A's wall beside its door.

Within chamber D the final occupation level was marked by a black layer, rich in sherds, flints, and bones, which slopes from the north-east to the south-west, but less than 1 in 10. In the bed-recess and around the hearth the black layer rested on a bed of yellow clay or on thin slaty slabs reposing on such clay. In the bed-recess the clay surface reached 79.5 feet above O.D. North and east of the fireplace the floor had been

repeatedly renewed. In the northernmost recess a big pot was found crushed on an immense stone "pot-lid" embedded in clay at 79.8 feet above O.D., and the level of the floor thus defined was continued beyond the recess's mouth by a slab which projected even over the edge of the hearth's kerb. A limpet box of slatey stone had apparently stood upon this paving slab: one carefully squared upright, 1 foot 8 inches long by 11 inches high, was leaning up against the radial slab, *m*, with a second upright, 1 foot 4 inches long by 11 inches high, slanting out beside it among the sherds (Pl. IX, 2; the larger upright is seen standing, as found in Pl. XII, 2). The south recess was also paved with gently sloping slabs on the same level as those in the north recess (Pl. XI, 1). An extra slab may have been inserted at the back of the south recess.

Below the slab pavings just described was a bed of yellow clay in the north and central ("dresser") recesses 79.7 feet above O.D., and another layer of slabs in the south recess. Below this floor came in the north recess another layer of slabs, extending to the hearth's kerb, 79.55 feet above O.D. Corresponding to this bed in the central recess was a "pot-lid," 18 inches in diameter, lying against the hearth's extra kerb, while there were other slabs in the south recess. Finally, in the central and southern recesses a series of slabs 79.3 feet above O.D. seem to represent the original floor, since the piers rest upon them (Pl. XII, 1). There was a slab at the same level in the north recess, but it was not bonded into the flanking walls and reposed upon a bed of yellow clay nearly 2 inches thick in which a narrow channel ran from the back of the recess not covered by the slab towards the drain to be mentioned directly. Beneath the clay bed lay a huge pot-lid, 1 foot 10 inches in diameter (Pl. XIII, 1).

The layer of slabs 79.3 feet above O.D. comes right up to the edge of the hearth on the east and can be followed also along the north side of the hearth and in front of the bed-recess (Pl. X, 1). These slabs proved to be the cover-stones of a drain which, starting in front of the central recess east of the hearth, can be followed parallel to the north kerb westward for a total distance of $7\frac{1}{2}$ feet. Thereafter it turns abruptly northwards to run out under the chamber wall beneath the floor of the supposed cell. The drain (Pl. XIII) is formed of very thin slatey slabs set on edge, some measuring as much as $2\frac{1}{2}$ feet in length and 1 foot in height. All these slabs have been deliberately trimmed to fit. In the edge of one a nick had been laboriously chipped out to accommodate a projection of harder stone on the proximal edge of the next slab. Pieces of hazel bark were found adhering to several of these drain slabs, so that the whole channel may be assumed to have been lined with hazel bark. At the bottom of the drain a deposit of bright green clay was observed near the west corner of the hearth. A deposit of the same material was found immediately under the slab floor of the central recess, in an unlined channel, 6 inches deep,

through normal midden under the south recess, and again under the wall in the north corner of chamber C. This deposit, suggesting the effluent from a byre, had probably accumulated in a channel running under, and therefore older than, the north wall of C, and even the central pier of D's dresser, but could not be connected with the similar deposit in the slab-lined drain under the floor of D.

In the corner between chambers A, C, and D is a curious enclosure framed by slabs on edge, *e*, *f*, *g*, and *h*. Slabs *e* and *f* on the north-east and south-east rest on a clay floor between 79.8 and 80.3 feet above O.D. (Pl. XV). The south-west boundary of the area was actually formed by two slabs on edge, *g* and *h*, the bases of which rest on a similar floor at 79.3 feet above O.D. Of these *h* had apparently once formed the back of the south recess in chamber D. But the big slab, *g*, had tilted forward on its basal end and carried the whole south end of *h* with it. After this collapse the gap, thus formed between the end of slab *f* and the now sloping face of *g*, had been filled up with very rough walling only one course thick and not bonded into the back of the north wall of chamber C, against which it is backed (Pl. XIV). On the north-west the area is bounded only by the ragged end of the wall round chamber D which had, as already explained, been torn out over precisely this area.

The space thus delimited had been filled up with three or four layers of large thin slabs similar to those used in chamber floors, piled up on the sloping midden floor with thin layers of loose earth between them. The piled slabs have raised the level in the enclosed area to 81 feet above O.D., and its surface may once have been higher since there are indications of the former existence of a still higher layer of slabs. The slabs must have been laid down after the collapse of the upright *g* (and accordingly after the displacement of *h*), since one of the slabs actually rested against its sloping face 80.3 feet above O.D. (Pl. XV). The slab platform cannot therefore be regarded as an appurtenance of chamber D to which slab *h* belonged. It may, however, have been connected with chamber A. The platform top is very nearly on a level with the floor of the right-hand bed in that chamber (Pl. XV, 1), and it will be recalled that in constructing the rear wall of that bed the outer face of the wall of chamber D had been adapted just north of the point where it had been torn away under our platform. It is accordingly suggested that the platform was designed to form the floor for a cell or annex to chamber A. The failure of the south end-wall of that chamber's right-hand bed to bond into the rear wall of that bed may then be connected with the entrance into such a cell as was suggested in the case of the comparable gap in the corner of D's bed-recess, where indications of a cell were more explicit.

The relative ages of the several chambers hitherto described can be tentatively defined in the light of the foregoing examination. Chamber D

was certainly erected before A and C. The upper courses of the outer face of the wall round D have been utilised to form the inner face for the rear wall of A's right-hand bed, while the destruction of the adjoining section of the wall round D was connected with the foundation for an annex to A. At the same time the north wall of chamber C incorporates part of the southernmost pier in chamber D apparently after that pier had slipped westward, perhaps at the time of upright *g*'s collapse. Chamber A must at the same time be at least partially contemporary with chamber B; the two were, for a time at least, connected by a doorway that forms an integral part of each, and both share a common wall on the south-west as on the south-east of A. And this south-western wall, albeit rather shadowy, presupposes the existence of the terrace for which the slabs forming the eastern wall of chamber C are a revetment. This revetment is itself anterior to the construction of a chamber in the area C, since that chamber's north wall is built up against the revetment. Indeed, slab *g*, that had collapsed before the completion of chamber A by its presumed cell, may have belonged to the revetment rather than to chamber D, but is in either case older than chamber C.

On the whole it looks as if chamber D were the oldest and had been more or less abandoned before the completion of chamber A, while chamber C is the latest of the four. But in any case the frequent reconstructions of the floors show that chambers A and D in particular were occupied for a considerable time, and partly perhaps contemporaneously. And all four structures belong to one and the same ceramic period. Decorated pottery was in fact conspicuously rarer in chamber A than in B or D. But, save for the Beaker sherds from A, the decorated pottery collected from the floor deposits of all four chambers belonged exclusively to the class described as A ware at Skara Brae—ornamented with applied strips. On the other hand, their foundations, save in the case of B, rest upon midden deposits accumulated in earlier periods. To obtain some light on the origins of the settlement considerable areas were excavated down to virgin soil (Pl. I).

The whole area of chamber C north of the post-hole and "limpet box" was thus explored, the hearth and oven being removed in the process. Below the hearth the midden deposit had a total depth of 3 feet, throughout which sherds and flints were found. The pottery included sherds decorated with slashed cordons—the B ware of Skara Brae found there only in periods I and II—and a few incised sherds of C ware. No such pottery had been found on the floors of chambers A to D.

Subsequently the deep diggings were extended under the floor of chamber D, the hearth and paving of which were removed. Here, too, incised and slashed sherds of B and C wares were found below the floor-levels. Two and a half feet below the floor of chamber D we came upon

a layer of slabs resting directly on virgin soil. But it was only on the extreme margin of the excavation, 25 feet south-west of A's hearth and 12 feet from that of chamber D, that any construction came to light (Pl. XVIII, 2). But here we exposed the outer face of a wall, resting on virgin soil only 76.1 feet above O.D. and standing some 18 inches high about the same depth beneath the turf. The exploration of the chamber which this wall presumably encloses had to be postponed as the field was under crop. We were fortunately able to reach the interior of an equally early structure under and north of chamber A.

It will be recalled that in the natural trough on the northern margin of this year's excavation we found traces of a passage running eastward from the door of A between that chamber and two others, not yet explored but termed F and G. The doorway proper is, of course, paved, but north of the paving the porch is floored only with stamped midden about 81 feet above O.D. Two feet east of the door, however, a step leads up 6 inches to the paved floor of the passage which runs eastward for 5 feet between the chamber walls rising from 81.6 to 81.8 feet above O.D. (Pl. VI, 2). Subsequently this level is carried on by a tough packing on which the walls of chambers A and F rest. We followed this level up eastward expecting to encounter rock-ledges. Instead we came on a finely built wall, concave to the west, and defined by its good masonry as the inner face of a chamber.

This wall was then followed down to a floor of slabs resting on virgin soil 80.35 feet above O.D. (Pl. XVI, 2). The packed earth floor of the passage was accordingly removed to the same level as far as the east end of the flag pavement (as the walls of A and F rest on the flags, they could not be lifted). Beneath the packed earth three kerbs of a hearth, sunk in virgin soil, were exposed, the fourth kerb lying presumably beneath the wall of chamber F (Pl. XVII). Finally, acting on a hint from Mr J. S. Richardson, we picked up the back of the same chamber's wall under the wall of A in that chamber's north corner (Pl. XVIII, 1).

Though known only from these small segments, the architecture as well as the relics show that the new chamber, E, though built under chamber A and destroyed to make room therefor, belonged to essentially the same culture. The curved east wall was preserved along an arc of chord $7\frac{1}{2}$ feet. It breaks off abruptly to the south, where the component stones had presumably been removed for use in later constructions. But a segment of the same wall was picked up, vertically under the wall of chamber A, some $6\frac{1}{2}$ feet from the breach. On the north too the wall now terminates raggedly. If continued $1\frac{1}{2}$ feet farther in the same direction the masonry would have abutted against the vertical face of a rock-ledge (Pl. XVI, 2). This face follows a natural back in the rock, but the Rinyoans may have quarried along the cleavage plane. In any case the wall must

have returned before reaching the rock, but the line of the return cannot be traced across the floor of chamber F though it may be picked up under that chamber's wall.

Chamber E's hearth is sunk in virgin soil. Its southern kerb measures 3 feet in length, the rest are partly covered by the wall of F. Against the south kerb and practically flush with it there was a paving slab resting on virgin soil (Pl. XVII). A slab-covered drain runs across the floor of E from the rear wall under the wall of F in the direction of the main drain. It presumably served to carry off water seeping down the cleavage in the rock behind the chamber's east wall. Part of a polished stone axe and sherds of rib-ornamented vessels, one with a scalloped rim, were found near the hearth, but against the east wall we collected only decayed pieces of bone. From the small section of E uncovered it is clear that even the earliest Rinyoans were already competent builders in stone and had devised such refinements as drains and sunk fireplaces. It is significant that no debris fallen from walls cumbered the floor of chamber E. As there is no doubt that such walls had existed and been carried higher than at present, it follows that the Rinyoans themselves had removed the stones for use in subsequent building, presumably in chambers A and F. This conclusion fortifies the hypotheses advanced on p. 12 to explain the equal absence of stones from the area of chamber A.

NOTES ON THE RELICS.

The acidity of the soil at Rinyo was unfavourable to the preservation of osseous remains. No bone implements were recovered this year, and only very few teeth and fragments of bone belonging to oxen and sheep (or goats), together with some formless hunps of spongy whalebone and a couple of antlers. The surviving relics are confined to potsherds and artifacts of flint and other stones. These suffice to attest a cultural tradition, continuous throughout the long occupation of the site and strictly parallel to that already familiar from Skara Brae on Orkney Mainland. At the same time significant differences in ceramic decoration and flint work can be detected between the several structural phases previously defined. We shall accordingly distinguish three groups of relics recovered respectively (1) on or above the floors of chambers A, B, and C; (2) on the floor of chamber D; and (3) below the floors of these chambers. (The last group will represent Rinyo I, the first Rinyo II). Of course such a division is not itself absolutely exclusive and cannot be applied to all relics recovered. Those found, not on floors or sealed under such, but in the infilling between walls, in drains, or in areas disturbed by agricultural operations, are useless for statistical purposes, and can only be termed "unstratified."

Pottery.—With one conspicuous exception the pottery from Rinyo is

coarse and poorly fired. Large grits are generally conspicuous in the body clay; in at least one base there are imprints suggestive of an admixture of chopped grass too. The outer surface is normally covered with a coat of finer clay. This is in most cases an applied "slip" which tends to peel off, but on some thinner vases may be merely a "mechanical slip," produced by rubbing the surface. In no case does the slip effectively mask the unevenness of the body clay due to coarse grits.

As at Skara Brae, most vases from Rinyo are thick-walled, more than 10 mm. thick; the majority range from 13 to 18 mm. in thickness and some attain 25 mm. But in contrast to Skara Brae, Rinyo produced an



Fig. 3. Sections of typical Pot Rims.

appreciable number of thin sherds, less than 10 mm. thick, and two vases—one from below the top layer of slabs in cell *efgh*, the other just beneath the clay floor of chamber D—scarcely exceeded 5 mm. in thickness. Such thin vessels are generally rather harder than the normal coarse vases, and naturally do not contain grits of the same absolute magnitude. But technically they agree with the rest both in the relative coarseness of the fabric and in the method of construction.

All pots were built up of successive rings of clay in the manner familiar from Skara Brae, so that, as there, "false rims" are common. The large howl from the northern recess in D was formed of no less than seven rings, the edges of which were exposed in the fractures. In thin vessels the rings are not grooved on the lower edge, but simply bevelled.

The vessels thus constructed seem all to have had flat bases, often markedly splayed as at Skara Brae. The rims normally show an internal bevel, but sometimes are flattened (fig. 3). At Skara Brae it was impossible to restore a complete pot from the crumbling sherds. At Rinyo

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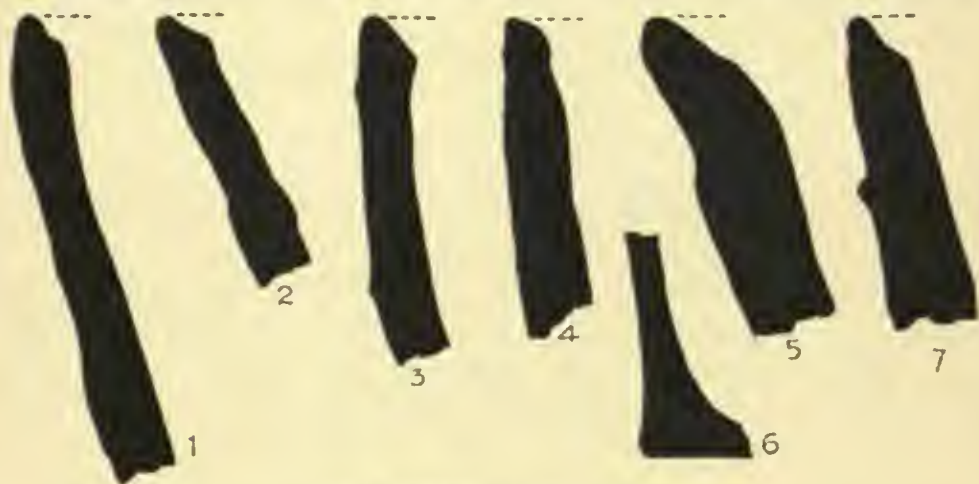


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some sherds were hardened by baking in a sand-bath immediately after extraction, while the large pot, discovered crushed in the northern recess of D (fig. 4), was treated *in situ* by a blow-lamp with good results. It has thus been possible to identify at least two characteristic shapes—an open bowl shaped like an inverted truncated cone and a pot with steeper walls and splayed base (fig. 5). The first shape is characteristic of the Grooved Ware of southern England,¹ while the splay-footed pots are significantly like the "Horgen" vases familiar from the collective tombs of the Seine-Oise-Marne province² on the Continent. Handles are not normal adjuncts



Fig. 4. Large Vessel from Chamber D. (1.)

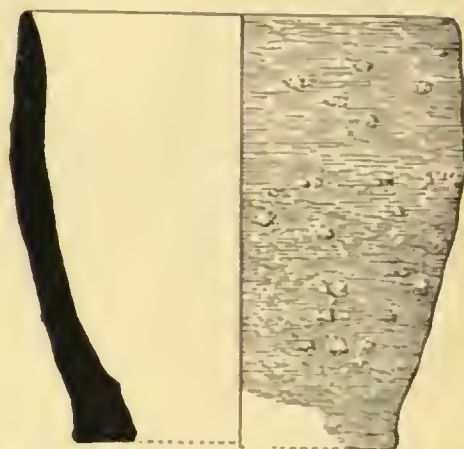


Fig. 5. Splay-footed Vase from Chamber A. (1.)

of Skara Brae pottery, but one small horizontally pierced lug was recovered from the north corner of chamber C at Rinyo (Pl. XXII, B, 2). The same chamber produced a miniature vase only 3.8 cm. high. Such miniatures—toys or votives—are common enough in the "Late Neolithic" painted pottery of south-eastern Europe,³ but farther west are hardly known till the Late Bronze Age.

Decoration.—The normal method of ornamenting pots at Rinyo as at Skara Brae was to apply to the surface strips or blobs of clay. They are held in position mainly by the slip, and tend to peel off with it. The width and thickness of the ribs varies greatly; in one case it looks as if a thin strip of twig or broken reed had been forced in between two ribs to produce a sharp cleft between them. Decorative ribs may be applied not only to

¹ *Proc. Prehistoric Soc.*, vol. ii. (1936) pp. 190-1, fig. 4.

² *Arch. J.*, vol. lxxxviii. (1931) p. 49; *Antiquity*, vol. viii. (1934) p. 38, fig. 6.

³ Childe, *Danube in Prehistory*, pp. 77, 101.

the exterior, but to the inside just below the rim, or even on the base as at Skara Brae.¹ In at least two instances rib decoration is combined with scalloping of the rim (Pl. XX, 1-2). Most sherds thus decorated are from 11 to 16 mm. thick; in isolated instances the thickness rises to 19 or even 25 mm., but only one sherd with applied decoration was as thin as 9 mm.

The motives formed by the ribs include wavy lines, zig-zags, bisected triangles, and lozenges. Both the technique and motives are identical with the so-called A ware or A style at Skara Brae. As there, the A style of decoration is represented at all levels at Rinyo.

Sherds representing at least five vessels (including the bowl shown restored in Pl. XXI, B) have been decorated with ribs enhanced by slashing with finger-nails or by jabs from a pointed implement like the B ware at Skara Brae. Four of these sherds, including Pl. XXI, B, were found sealed beneath the floor of chamber D, C, or A, and accordingly belong to Rinyo I. To the same period belongs the sherd shown in Pl. XXII, B, 7, on which the rib takes the form of a ledge, the upper surface of which is relieved by a series of almost vertical jabs from a sharp-pointed implement. But the same style of decoration is seen along the thickened rim of a small pot (9 mm. thick and perhaps 16 cm. in diameter) found in chamber A (Pl. XXII, B, 1).

True "grooved" ornament, equivalent to style C at Skara Brae, formed by shallow incisions and punctuations in the slip, is represented by a comparatively small number of relatively thin sherds about 10 mm. thick, all found close to virgin soil under the floors of chambers C and D. The design on Pl. XXII, A, 4-5 is strikingly like that on a sherd of Grooved Ware from the submerged Essex coast,² and recalls that on a pot of kindred fabric from the segmented cist of Unival in North Uist.³

Exceptional Sherds.—From below the slabs and underlying clay under cell *efgh* came the sherd shown in Pl. XXII, B, 6, perhaps part of the same pot as Pl. XXII, B, 7. It is decorated with two rows of imprints made with a blunt four-toothed comb, some 6 mm. long. Though the comb here employed is shorter, the effect resembles that of the "false maggot" impressions on early Finnish *Kammkeramik*⁴ and on English Peterborough ware.⁵

Pl. XXI, 1 shows a tumbler-shaped vessel of rather hard clay with a mechanical slip on the outside, found in chamber B. It is decorated with sharp incisions more reminiscent of Unstan ware than of grooved ware.

The object shown in fig. 6 was recovered between the inner and casing walls round chamber D. It seems part of the ring-shaped base of a vessel, the walls of which have broken away. In the centre of the base was a circular hole, the edges of which have been carefully finished off before

¹ Childe, *Skara Brae*, pl. xlvii, 3.

² *Proc. Prehistoric Soc.*, vol. ii, pl. xxxix, 12.

³ *Ibid.*, vol. iv, pl. lix.

⁴ *Acta Archaeologica*, I (1930), 105 ff.

⁵ *Arch. J.*, vol. lxxxviii, p. 117.

firing. The annular space between the hole and the walls was decorated internally with triangles filled with punctuations.

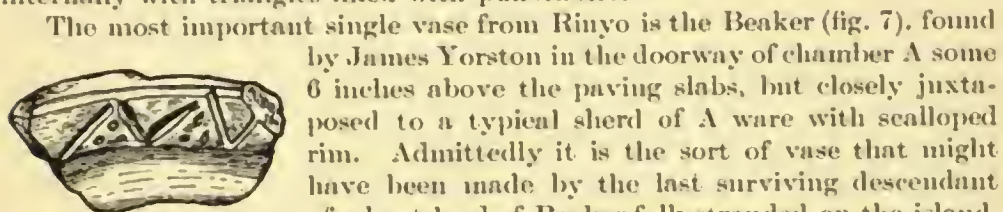


Fig. 6. Pottery object. (1.)

The most important single vase from Rinyo is the Beaker (fig. 7), found by James Yorston in the doorway of chamber A some 6 inches above the paving slabs, but closely juxtaposed to a typical sherd of A ware with scalloped rim. Admittedly it is the sort of vase that might have been made by the last surviving descendant of a boat-load of Beaker folk stranded on the island. Its form is frankly debased; the sparsely scattered rouletted lines preserve only a blurred reminiscence of the handsome ribbon chevrons illustrated, for instance, by the Beaker from Ellon in Aberdeenshire. Even so, the Beaker stands out as a piece of potting far superior to the standard local products. Though the walls are 6 mm. thick and the body clay contains conspicuous grits, the surface is covered with a firm and smooth slip; the vessel is hard-fired and almost black; the decoration is executed with the square-toothed comb-stamp regularly employed by Beaker folk. In other words, the vase is no local imitation, but an authentic product of the Beaker school.

Flint Implements.—Flint was quite extensively used at Rinyo in contrast to Skara Brae. In 1938 no less than 250 implements, together with 80 split pebbles, were recovered. The raw material was derived from pebbles such as are found in abundance on the beaches. Naturally the small size and poor quality of most of these pebbles has cramped the flint-knapper's style and affected the forms which he could produce. In addition, polished flint axes were re-used as cores; two unstratified implements and a burnt flake found below the floor of chamber C represent the remains of such axes. Finally, the only arrow-head discovered, in the drain of chamber D, had been rechipped to make a scraper (fig. 8, 1). Miss B. Laidler has studied the products with the following results:—By far the commonest finished implements were scrapers accounting for 175 of the total. There were 61 unworked flakes, from 2 to 6 cm. long, 14 flakes trimmed along one edge and 3 thick flakes trimmed on two edges.

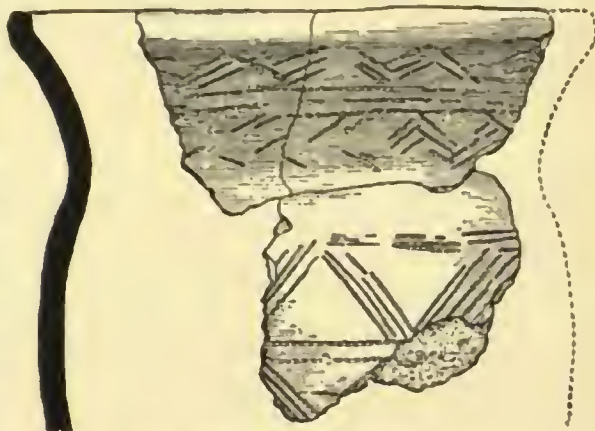


Fig. 7. Fragments of Beaker. (1.)

The distribution of the several types is disclosed by the following table:—

		Scrapers.				"Points."	Trimmed Blades.	Prisms.	Flakes.	Total.
		Thumb- nail.	Keelcd.	Duck- billed.	Misc.					
Rinyo II	Chambers A-C	20	0	2	5	0	0	0	0	42
	Chamber D	11	2	0	1	0	1	0	1	16
Rinyo I	Below A, C, and D	4	3	0	14	2	7	3	11	50
	Total	41	5	8	20	2	8	3	18	108
	Unstratified	67	9	4	18	0	7	0	32	137
	Grand total	111	14	12	38	2	15	3	50	245

The sample seems large enough to justify the inferences that thumb-nail scrapers were preferred in Rinyo II to duck-billed and other types popular in the previous phase, and that trimmed blades and prisms ceased to be made after Rinyo I.

A polished flint knife was found in the north corner of chamber A at floor-level. It is made from a tabular pebble, and its shape has doubtless been determined by the size of the pebble. None the less it resembles the polished knives from Scottish chambered cairns (Uistau, Camster round, Ormiegill, and Tormore) more closely than the discoidal ones attributed by Dr Clark¹ to the Peterborough-Beaker phase in England.

Axes were not made of flint, but of fine-grained polished stones. Three specimens were collected—one unstratified, one from chamber A above the paving against the west wall between the door and the right-hand bed, and the third near the hearth of chamber E. The latter, dated to Rinyo I, was broken. It is made of finely grained sandstone or sandy flag, probably local. Part of the rounded butt-end of a hammer-axe or mace-head of volcanic stone turned up before excavation started in the doorway of chamber G. Rough club-like implements of slate or sandstone were found, but few are typical. Attention may be drawn to peg-like pieces of finely laminated sandstone found below the floor of D (Pl. XXIII, C, 1), a fragment with a hole hammered out in it found high up in the infilling outside the east wall of chamber A.

Stone balls were represented by two specimens, both from D. Though their surfaces have been carefully rounded and smoothed, they are less

¹ *Proc. Prehist. Soc. East Anglia*, vol. vi. pp. 50 ff.

symmetrical than the comparable objects from Skara Brae. Both seem to be made of camptonite (Pl. XXIII, A).



Fig. 8. Types of Flint Implements; (1) Arrow-head re-used as scraper; (2) Flat thumb scraper; (3) Steep scraper; (4) Duck-bill scraper; (5) Thumb (steep) scraper; (6) Point; (7) Large rough scraper; (8) Rough knife (?); (9) Butt end of knife?; (10) Awl (?); (11) Polished discoidal flint knife; (12) Prismatic chip with blunt end (knife?).

Mortars and Paint-Pots.—A small stone mortar with a perfectly circular basin, some 11 cm. in diameter hollowed out in a roughly cubical block of

sandstone, Pl. XXIII, B, was discovered just north of the slabs behind Hc between the slab and the shallow wall-stump. It may therefore belong either to chamber C or to D. An unfinished paint-pot, hammered out in an irregular block of sandstone, was included in the infilling of the pier between slab *m* and the bed-recess of chamber D.

Pot-Lids.—Roughly chipped discs of slaty stone of all sizes were very common all over the site. The largest, 56 cm. (22 inches) in diameter, constituted the original floor of the north recess in chamber D, and other large discs were included among the paving slabs of the same chamber. It may be doubted whether they ever served to cover pots. On the other hand, the name is surely justified in the case of the little disc, 17 to 18.5 cm. across, lying beside the hole in Hc which may well have served to cover a pot that had stood in the hole. In connection with the discs we ought to mention the excellent squaring of the "slates" that form the sides of the tanks and post-holes.

A pebble, 3 cm. long and 3 cm. wide, with both ends rubbed smooth by use as a burnisher, was found in the passage between chambers A and F at the level of the slab paving of Rinyo II (Pl. XXIII, C, 2).

Pieces of pumice-stone, grooved presumably by use for sharpening bone points, were found in great numbers at all levels. They resemble the grooved pumice-stones from Jarlshof, and may be taken as proof of the extensive use of bone pins and awls which the soil of Rinyo has consumed (see Pl. XXIII, C, 3).

Lumps of polished and striated hematite were found in chambers A and D, and chips from such also beneath the floors in a deposit of Period I.

Over the area of chamber D, but chiefly in superficial layers where disturbance is possible, we collected some small lumps of slag-like material. A specimen was sent to Dr C. H. Desch of the National Physical Laboratories, who kindly reports as follows:—

The material is certainly not a metallurgical slag. It consists of fine grains of sand cemented together by a small quantity of clay. The amount of iron is very small indeed and there is a trace of manganese; there is no copper or nickel.

The fuel normally burned at Rinyo, as at Skara Brae, was peat, yielding vast quantities of reddish ash. But small pieces of charcoal—twigs rather than branches—of alder wood were found in the hearth of chamber A. Charcoal of the same wood and also of birch was found in clay under chamber D. In damp clay under the floor of that chamber we recovered some bladders of seaweed, identified by Mr M. Y. Orr of the Royal Botanic Gardens, Edinburgh, as *Ascophyllum nodosum*.

Economy and Date.—The foregoing summary will suffice to disclose the remarkably accurate agreement of the relics, as well as the architecture of Rinyo, with those of Skara Brae. The much more extensive use of

flint and the employment of pumice must be attributed to local circumstances due to geological conditions and ocean currents. Hence in estimating the economic status of the community established at Rinyo the evidence from Skara Brae can safely be used to supplement the data collected so far at the new site. Stock-breeding must have provided the basis of life, and milk, beef (or rather veal), and mutton were doubtless the staple foods. Hunting weapons and fishing tackle are conspicuously absent. The inland location of the site further emphasises the insignificance of fishing as an economic activity. Still, at least two pieces of stag's antlers were recovered as well as a good deal of whalebone. The latter might, however, have been obtained from stranded whales, and even the antlers may have been dropped.

For agriculture Rinyo produced even less evidence than Skara Brae. Indeed the absence of any trace of sickle gloss from such a large sample of flint blades taken in conjunction with the lack of saddle querns must be admitted as valid evidence against the practice of agriculture by these pastoralists. Yet despite their pastoralism they were strictly sedentary, remaining at the same sheltered centre in their pastures continuously for a longer period than has so far been attested by accumulated deposits for any other groups in Britain before the Iron Age.

Judging by the very numerous scrapers and the bone points which must have been sharpened on our grooved pumice-stones, skins served as garments. No relic suggestive of a textile industry has been recovered. The community was Neolithic, not only in the formal sense that polished stone axes were made and used, but also economically inasmuch as the group was self-sufficing. Rinyo was not, however, entirely cut off from contact with other groups inasmuch as a Beaker found its way thither.

The Beaker gives us the possibility of assigning a relative date to the culture represented at Rinyo and Skara Brae. However late the degenerate Beaker may be absolutely, its presence means that the latest phase of occupation at Rinyo falls within the Beaker period in North Scotland though, it need hardly be added, the Beaker period here need not, and probably does not, coincide with the same period in southern England. The polished flint knife and the hammer-butt point vaguely to the same conclusion, since both types in England belong more or less to the Beaker phase. But in Scotland they are included in the furniture of collective tombs, the foundations of which go back to pre-Beaker times.

At Rinyo the Beaker and the polished knife were attributable to the latest occupation of chamber A. The older phases, represented in chamber D and below it, can be termed "pre-Beaker" as long as the vase shown here remains the first and only Beaker from Orkney. Thus, if Beakers mark the beginning of the Bronze Age, our Phase I can be termed Neolithic from the standpoint of relative chronology. Still this term must

not be taken as implying anything about the relation, chronological or otherwise, of Rinyo and Skara Brae to the chambered cairns.

There is a round stalled cairn less than a quarter of a mile north of Rinyo on the brae above it and a long cairn of the same type in the valley close to Bigland Farm. But no Windmill Hill nor Unstan pottery nor leaf-shaped arrow-heads typical of the grave goods from chambered cairns have yet been found at Rinyo nor at Skara Brae. Nor has any chambered cairn, save Quoyness on Sanday, been found furnished with pottery or other unmistakable relics of the kind found in our villages. The re-used arrow-head from the drain of chamber D indeed implies that the chamber was occupied after at least one "Neolithic" weapon had been made and lost on Rousay. But to define the foundation of the site more closely we must turn to southern England.

In 1936 Stuart Piggott¹ very acutely recognised the connection between Skara Brae pottery and the Grooved Ware of East Anglia he was engaged in defining. Our excavations have confirmed his thesis by producing further parallels to East Anglian shapes and motives. Now in southern England Grooved Ware is associated more or less with Beaker and Peterborough wares. In Essex in particular it occurs on an old land surface from which Windmill Hill and Peterborough pottery and sherds of B, but not of A, Beakers have been collected too. It is inferred that this tract was submerged after the advent of B Beaker folk, but before A Beaker folk reached Essex.² Hence, without postulating a migration of herdsmen from East Anglia to Orkney, it remains unlikely that Rinyo or Skara Brae was founded before the first Beaker folk reached England. On a short chronology, placing that event about 1800 B.C., the occupation of our site might be placed somewhere in the four centuries preceding 1400 B.C. But even that date must be accepted only with extreme reserve until more connected remains be discovered to fill the many centuries preceding the beginning of the local Iron Age with the broch culture, hardly earlier than 200 B.C. and quite possibly later. Perhaps the Skara Brae-Rinyo culture or its descendants will turn out to be the dominant element in that period. Survivals of the ceramic tradition, represented by the thin plain vases from Rinyo Phase II, may be expected even in "the Early Iron Age" pottery of Orkney.

In conclusion we wish again to express our appreciation of the work of Messrs Flett, Sutherland, and Yorston in uncovering the structures and rescuing the relics. During part of the season Messrs R. B. K. Stevenson and R. Milne assisted in supervising operations and restoring vases. The excellent plans are due to the expert and sympathetic labours of Mr David Wilson. To Dr C. H. Desch, F.R.S., Mr M. Y. Orr, and Mr G. V. Wilson, we are indebted for the solution of technical questions.

¹ *Proc. Prehistoric Soc.*, vol. II, p. 201.

² *Ibid.*, p. 210.

II.

FYVIE CASTLE. By W. DOUGLAS SIMPSON, M.A.,
D.Litt., F.S.A.Scot.

I.

"Fyvie lands ly broad and wide
And o hnt they ly bonny!"

The district of Fyvie, with its pleasant braes descending southward to the Ythan valley, is one of those localities by nature suited for supporting an early population. Its riverward slopes are not too rapid to prevent good deep earth from accumulating, while at the same time they are steep enough to provide natural drainage, both surface and through the gravel subsoil, and thus were admirably fitted for primitive husbandry at a time when the Howe of Fyvie—the fertile haughs by the river-side that now form the best farming land in the parish—were water-logged and noisome swamps. On those pleasant sheltered and sun-lit slopes—still known for their early harvests—the ancient inhabitants built their villages and grew their bear and oats. The forests provided them with abundant timber and game, as well as a ready-to-hand supply of fuel, later superseded by the peat mosses in whose thick beds on the colder uplands of the parish the remains of the primeval forests are embahned.¹ In the Ythan, in early days as now, was available an ample stock of salmon, trout, and eel. Under these circumstances it is hardly to be wondered that traces of pre-historic occupation are frequent in Fyvie. Tools and weapons of the Stone and Bronze Ages have been picked up at various places in the parish, and burial cairns of the latter period exist at Cairnhill, at Cairn Fenny, at Cairchedly, at King's Seat, at Back Hill, and at Pitmuncy, while there are remains of stone circles at Burreldales, Rappula Wood, Hallgreens, and Monkshill.²

Where the early population was gathered together, thither the Christian missionary would make his way. That Fyvie was a notable centre of the Celtic Church is proved by the group of Pietish sculptured stones now built into the east gable of the parish church.³ The latter was dedicated to St Peter, and I have elsewhere suggested that it may have been in its origin one of the churches founded by St Boniface in his mission to Pietland about the year 715.⁴

¹ A hundred years ago "the ordinary description of fuel" used in Fyvie was peat (see *The New Statistical Account of Scotland*, vol. xli. p. 344). Nowadays no peat is cut in Fyvie.

² See *Proceedings*, vol. xxxvii. pp. 102-6, 108-9.

³ J. Romilly Allen and J. Anderson, *The Early Christian Monuments of Scotland*, pt. iii. pp. 164-6, 194-6; *Proceedings*, vol. xlix. pp. 41-3.

⁴ See my *The Celtic Church in Scotland*, p. 111.

In the days of the Anglo-Norman penetration, during the twelfth and thirteenth centuries, the Celtic ecclesiastical establishment at Fyvie, probably in much the same way as happened at Turriff, Deer, and Monymusk, was reconstituted as a priory of Tironensian monks, dedicated to the Virgin Mary and subordinate to Arbroath Abbey. The site of the priory, now marked by a cross, is on a gentle knoll north-east of Lewes, and its ruins were still visible in the latter half of the eighteenth century.¹ About the same period the locality was organised, in the usual way, into a manor and parish, with a castle and a parochial church as the civil and ecclesiastical nuclei respectively. The church stood on the same position as its successor, which dates from 1808; the ancient building measured 90 feet by 22 feet within the walls, and therefore possessed the elongated proportions commonly met with in Scottish mediæval parish churches. In addition to the parochial church, there was the chapel of St Rule at Follarule, founded in 1376,² as well as several subordinate chapels. From 1325 onwards we have numerous references to the burgh of Fyvie, and as Fyvie was a crown demesne throughout most of the fourteenth century it is likely that this was at first a royal burgh.³ Later, as often happened, its early status seems to have been forgotten, and under the Earls of Dunfermline it appears as a burgh of barony. In a description of the parish compiled in 1723 it is stated that "about a mile and a half north-east from the church there is an old village, called Woodhead of Fetter Letter, where is a stone tolbooth and a stone cross, and where in old times stood severall yearly mercats."⁴ It therefore seems that here—latterly at all events—was the locus of the now vanished burgh. Thus the parochial topography was a curiously scattered one, and the usual close association of church, castle, and burgh was here conspicuously absent.⁵

Adjoining the castle was the Park of Fyvie, called the King's Park in 1395. The Park Burn preserves its name. In 1503 the barony possessed three mills, one at Meikle Gourdas—probably the romantic mill, now disused, celebrated in the ballad of "Tifty's bonnie Annie"—and two others,

¹ "From the appearance of the foundations, which were extant some years ago, it should seem to have been three sides of a court, the middle of which was the church, and the two sides the cells and offices of the monks" (*Statistical Account of Scotland*, vol. ix, (1793) p. 403).

² *Registrum Episcopatus Aberdonensis*, vol. i, pp. 109-11.

³ See *Exchequer Rolls*, vol. i., Preface, p. lxxxviii, and pp. 355-6.

⁴ *Coll. Aberdeen and Banff*, p. 105.

⁵ In a paper published by the Hanffshire Field Club in 1899, Rev. Alexander Bremner contended that the royal burgh stood on the Castle Dales, the terrace immediately south of the castle. But some of his arguments depend on old place-names inaccurately transcribed. The burgh would naturally be outside the royal park, and as the priory lands of Lethenty and Ardlogy adjoined the park on the east and south-east, we may thus have the reason for the eccentric situation of the burgh, if it really was at Woodhead. But the ancient topography of Fyvie presents some difficult problems, and greatly requires working out. Here I can do no more than tabulate the facts, which would amply repay more thorough investigation.

also now idle, at Mill of Petty and Mill of Saphock.¹ Our picture of the appurtenances of the mediæval demesne is completed by the Gallowshill and Gallowsluck, north of Kirktown.

In the thirteenth century Fyvie Castle was the capital messuage of the Thanage of Fermartyn, comprising the central district between the Ythan and the Don. At that time it was royal property, and charter evidence shows that William the Lion was at Fyvie, with the high officers of his court, in 1211 or 1214, while Alexander II. granted a charter from here on 22nd February 1222.² Edward I. visited "Fyuin Chastel" on Saturday, 21st July 1296.³ In the next century Fyvie continued to be a royal demesne, and was leased to various occupants, but by Robert II. it was granted to his eldest son, the Steward of Scotland, afterwards Robert III., from whom it passed to his cousin, Sir James Lindsay, Earl of Crawford and of Buchan. His wife was Margaret Keith, daughter of the Great Marischal; and in 1395 she was besieged by her own nephew, Robert Keith, in the Castle of Fyvie, but was relieved by her husband, who hurried north across the Cairnamounth Pass and defeated Keith in a smart skirmish at the Kirk of Bourtie. According to Wyntown, building operations were in progress at Fyvie Castle when Keith began his blockade:

"For his ⁴ masownys fyrst gert he
Fra thar werk remowide be;
And quha that wattir brocht fra the burne
He gert thaim oft withe his ost spurne.
Thus he demaynit that lady
Withe in the Castel of Fiwy." ⁵

This seems to be the first mention of stone buildings at the castle.

The later history of Fyvie need not be set forth in detail here.⁶ In the devolution of the demesne five periods are distinguished, during each of which it was held by a different family. They may be tabulated for reference as follows: (1) the Preston period, *circa* 1390-1433; (2) the Meldrum period, 1433-1596; (3) the Seton period, 1596-1690; (4) the Gordon period, 1733-1889; and (5) the Leith period, from 1889 to the present day. Each of these periods has left its mark on the fabric of the castle; but its architectural glories belong to the time of Alexander Seton, Lord Fyvie, and afterwards first Earl of Dunfermline, President of the Court of Session and Chancellor of Scotland (Pl. XXIV), who held Fyvie from 1596 to 1622—a man of high culture, and a notable patron of scholar-

¹ See *Coll. Shires Aberdeen and Banff*, p. 504. Mill of Tifty immediately adjoins the farm of Meikle Gourdas.

² *Registrum de Dunfermelyn*, p. 32, No. 53; *Registrum velus de Aberbrothock*, p. 93, No. 131.

³ *Ragman Rolls*, pp. 179, 183.

⁴ I.e. Sir James Lindsay's.

⁵ Wyntown, *Original Chronicle*, bk. ix. chap. xiv.—ed. F. J. Amours, vol. vi. p. 378.

⁶ See A. M. W. Stirling, *Fyvie Castle*; also J. B. Pratt, *Buchan*, 4th ed., pp. 396-411.

ship and the arts. "He was in great esteem att Rome for his learning," so writes the old family chronicler, "being a great humanist in prose and poeie, Greek and Latine: well versed in the mathematicks, and had great skill in architecture and herauldrie."¹

At the end of October 1644 Fyvie Castle was occupied by Montrose; and in his entrenched camp on the high ground to the east of the castle, where its ditches still remain, the royalist leader was unsuccessfully attacked by Argyll, whose bivouac is stated to have been in the field still known as Campfold, on the hind of Upper Ardlogie, east of the parish church.² Two years later, in 1646, the Castle of Fyvie was fortified in the royalist interest by Lord Aboyne, who left in it "a strong garisone" under Captain John Gordon and Captain Blackater.³ During the Cromwellian occupation of Scotland the castle was garrisoned by a Puritan detachment, as vividly described in her diary by Mistress Murray (Lady Halkett), a member of the household at the time.⁴

II.

The castle, *magnifica et amena arx*,⁵ stands within a great bend of the River Ythan (see sketch map, fig. I), which, approaching it from the north-west, flows first west and then south, enclosing the position on the north and west faces. The site is an elevated gravel mound, which on the north side falls steeply awny, directly under the walls, into the bed of the river. On the east and south-east are more gentle slopes, descending into a wide shallow hollow. Southwards, a spacious level platform, known as Castle Dales, runs out into a broad, hog's-backed ridge. To the west and south-west, again, the ground descends, at a little distance from the castle, dropping down gently into the Ythan valley. Along the south-eastern and southern margins of the position, beyond the limits above described, there is a broad and sinuous artificial lake, covering some fifteen acres—teeming with trout, and now a sanctuary for all kinds of wildfowl. This lake occupies the place of an earlier marsh or swamp, more extensive and probably once connected with the river.⁶ On the opposite side of this lake the ground rises abruptly, but at such a distance from the castle as not to command it. Thus in the days before artillery the position was one of great natural strength. On three sides the castle

¹ Alexander, Viscount Kingston, *History of the House of Seytoun*, p. 63. For the Lord Chancellor's life see *Memoirs of Alexander Seton*, by George Seton.

² For the action at Fyvie see G. Wishart, *Deeds of Montrose*, ed. Murdoch and Simpson, pp. 73-5; Patrick Gordon, *Brilliant Distemper*, pp. 90-2; J. Spalding, *Memorials of the Troubles*, vol. II. p. 426.

³ Patrick Gordon, *op. cit.*, p. 176.

⁴ Stirling, *Fyvie Castle*, pp. 221-31.

⁵ Robert Gordon of Straloch, *Præfecturarum Aberdonensis et Bonfienensis Nova Descriptio*, 1651-60, in *Collections, ut supra*, p. 21.

⁶ The *stagna et aquæ de Fyviyn* are on record in 1200, in which year Henry de Fyviyn accounts to the Exchequer for eels taken from them (*Chamberlain Rolls*, vol. I., Alex. III, p. 33).

was surrounded by water, and the only convenient access was through the narrow isthmus, at present no more than 500 feet broad, which intervenes between the south-western point of the marsh and the left bank of the Ythan. An old ford crosses the river about a mile south of the castle,

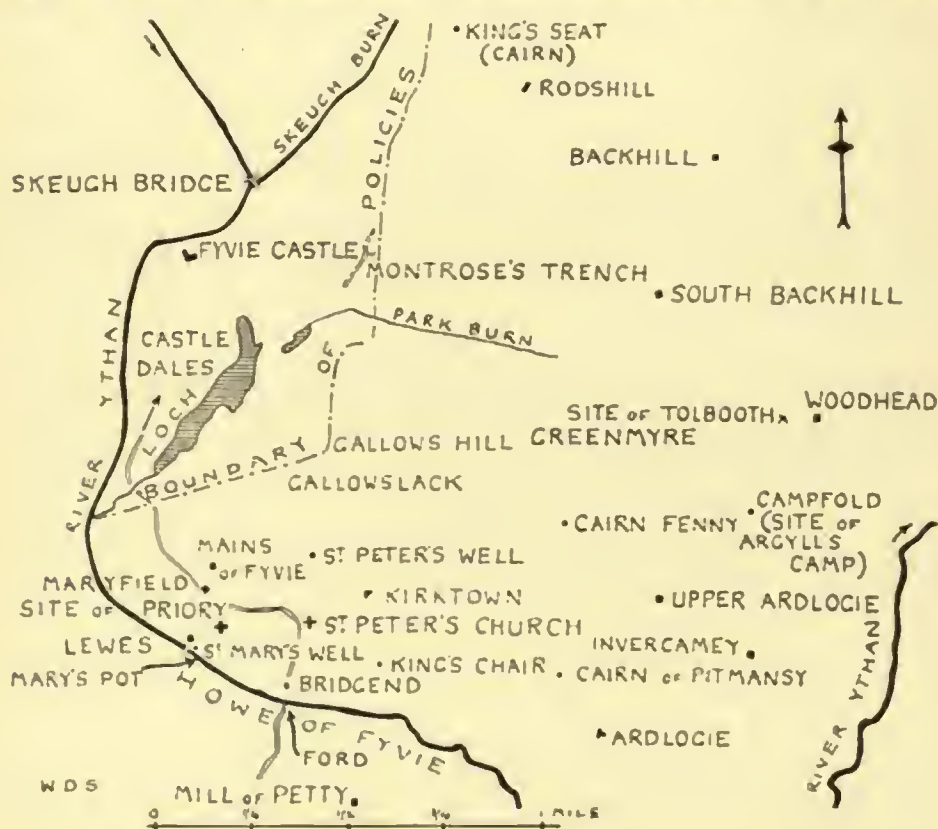


Fig. 1. Sketch Map of Fyvie.

and appears to have been the ancient means of approach.¹ Although the river is now fordable at any point, its haughlands in olden days were largely water-logged, and these must have presented a considerable obstacle to an attacking force. Descending from the north-east, and passing the famous Mill of Tifty, the Skengh Burn enters the Ythan just above the

¹ This seems to be the *Stanyford* mentioned in 1325 (*Registrum vetus de Aberbrothock*, p. 311); it was therefore stone-bedded, as it still is. The farm at the ford is called Bridgend, which shows that latterly there had been a bridge here, prior to the erection of the present bridge at Lewes, which was in existence in 1723 (*Collections*, p. 495). This farmstead has all the marks of great age, and one of the outhouses is largely made up of stones removed from a medieval building, including a heavy double-chamfered door, in red and yellow freestone. The old road, which is metalled, and marked out by fine old ash trees, thence makes direct for the parish church. Further on, it is traceable in the castle policies to the left of the present east drive.

castle, and with the marshlands that skirted it would have interposed an additional barrier to any hostile party approaching from the north.

No ditch was possible, or necessary, on the north side of the castle, where the Ythan forms a natural moat. If a ditch existed on the other sides, as is probable, it has long since been filled in.

In its present condition the castle (see plans, figs. 2 and 3) consists of two great ranges of building—one, 147 feet in length, facing south and forming the front, while the other, at right angles to it, extends 136 feet to the north, facing west. At either end of the south front (Pls. XXV and XXVI) are two tall square towers, finished off with corbelled angle turrets and high-pitched roofs between crow-stepped gables. In the middle of this front is the original main entrance, which in grandeur and boldness of design, as well as in the scale and vigour of its execution, may rank as the crowning triumph of Scottish baronial architecture. It consists of two stout rectangular towers with rounded fronts, which, at a height of some 38 feet, are corbelled out to the square and then are united by a deep arch of 11 feet span, carrying a huge cap-house, gabled to the front and on the sides, and provided frontally with angle turrets. From this magnificent central mass the south front has battlemented wall-heads extended on either flank, until they terminate against the gabled stair-heads of the two corner towers. Dormer windows break the roof of the central cap-house and the corner towers, and the upper parts of the elevations generally are profusely decorated with the moulded and heraldic detail and grotesque statuary so commonly found in the richer castles of the period. In the centre, between the half-round towers, is the arched entrance (Pl. XXVII), still retaining its massive wooden door and inner iron "yett," and covered by a *meurtriére* in the deep and lofty arch overhead.

The gatehouse is twice dated 1599, and bears the arms and monogram of Lord Dunfermline. It is therefore known as the Seton Tower. The south-eastern and south-western towers are called the Preston¹ and the Meldrum Towers; and it is inferred accordingly that their lower portions were erected respectively by these proprietors, although their upper parts have been remodelled by Lord Dunfermline in harmony with his grand symmetrical design.

The external elevation of the west wing (Pl. XXVIII) partakes of the same general character, but has two large eighteenth-century buttresses with weathered intakes; there are no battlements, and the high-pitched roof, loftier than that on the south front, is pierced by four dormer windows. There is a side-entrance, over which is incised the date "1599 zeiris." At the north end this wing is terminated by a fourth tower, similar in general character to the Preston and Meldrum Towers; but this

¹ "There is part of the old work there still called The Preston's Tower, because built by them" ("View of the Diocese of Aberdeen" (1732) in *Collections*, p. 494).

tower dates only from the eighteenth century, having been erected, about 1777, by General the Hon. William Gordon. It is thus known as the Gordon Tower. Very remarkably, considering the time when it was built,

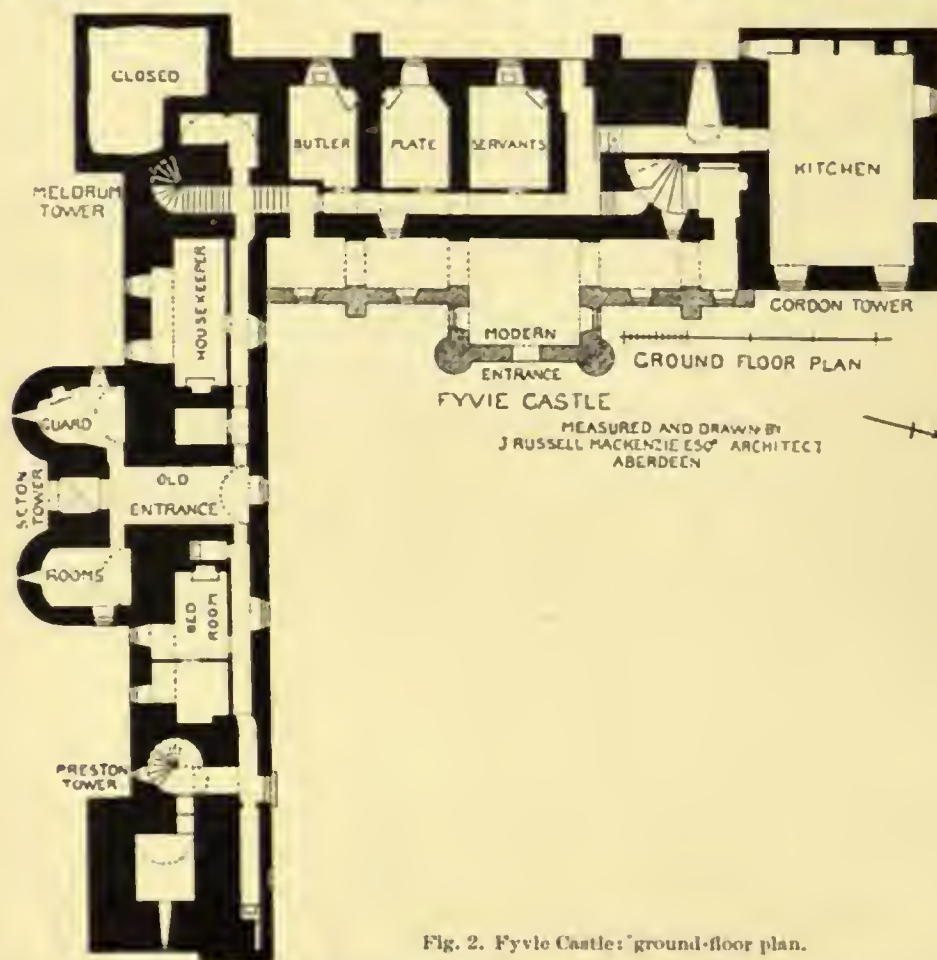


Fig. 2. Fyvie Castle: ground-floor plan.

the architecture of this tower was harmonised with that of the sixteenth-century work, and the imitation must be regarded as a highly creditable performance, although there is a patent decline in grace in the moulded profiles of the turrets, and the hard stone dressings at the quoins and voids produce an unsatisfactory effect, heightened on the former by the absence of an entasis. From the Gordon Tower a wing, furnished with large oriel windows inspired by those at Huntly Castle,¹ runs out westward; this was erected in 1890, and is styled the Leith Tower.

¹ Obvious at a glance, this is proved by a letter from the architect, John Bryce, to Lord Leith of Fyvie, dated 6th June 1890, preserved among the muniments at Fyvie Castle.

The inside or courtyard aspect of the castle has been a good deal altered by a one-storeyed porch and corridors along the west wing; while the



Fig. 3. Fyvie Castle: first-floor plan.

entire inner front of the south wing has been rebuilt, as we shall see hereafter, in order to give the wing greater width, a one-storeyed annexe being at the same time applied to the face of the Preston Tower, so as to form a flush front at the ground-level. All these alterations, in both wings, are the work of the General. His addition to the Preston Tower bears his coat of arms and the date 1777.¹ There are also various additions and

¹ Some part of General Gordon's work was still in progress in 1783, in which year the parish minister reports that "when the addition which is at present making to the house is finished, it will

embellishments of the Leith period, which need not be described. Two dormer windows on the inside of the west range bear the date 1599.

The grey, harled wall-planes of the castle contrast most beautifully with the deep red Caminalown freestone used for the dressed and carved work, and with the blue slating of the roof. The main ranges contain three full storeys and a garret, and the towers and gatehouse have a storey extra. An inexhaustible wealth of interest is presented by the minor architectural features and enrichments of the great building, but into these it is not our purpose to enter. Mention may be made, however, of three remarkable plaques, belonging to the Seton period, built into one of the eighteenth-century western buttresses, into the Meldrum Tower, and into the Seton Tower, respectively. The one on the buttress displays the naked figure of a woman in the conventional classical attitude of modesty. That on the Meldrum Tower shows a bust of a bearded and turbaned Oriental, with the inscription *ARIADENVS BARBARVS*. Who this is I have been unable to discover, unless it is meant for Ariabignes, the Persian commander who fell at Salamis. The figure on the Preston Tower shows a man wearing a Phrygian cap, with a coat of arms beside him, now illegible, and the inscription *PETRVS LADVS DVX VENETIE*. This is Pietro Landò, Doge from 1539-45.

From the courtyard the castle, in the original arrangement, was entered directly by a door at the north end of the west wing. It opens on to a lobby at the base of the magnificent newel stair, 9 feet wide (Pl. XXIX), which is the glory of Fyvie, and has been so admirably described by Dr Thomas Ross.¹ The stair comprises 63 steps, and is enriched with no fewer than 22 coats of arms and heraldic devices. Throughout the ancient parts of the building the basements are vaulted. Inevitably the upper floors have been much altered, but they still retain many original and charming features, notably the panelling in the charter-room (Pl. XXX) and the fine plaster ceiling in the old dining-room, now the morning-room (Pl. XXXI), which was executed in 1683 for the fourth Earl of Dunfermline by the Edinburgh plasterer Robert Whyte.²

III

Accepting the traditional date of the Preston Tower, *circa* 1400, writers on Fyvie Castle have hitherto regarded this as the nucleus from which the whole wide-flung edifice has evolved. For example, Dr Mackay Mackenzie, after quoting Leslie's description of the castle, in 1578, as *insigne palatium*, goes on to assert that "Fyvie was an amplification of an original rect- be one of the largest and most commodious houses in the county" (*Statistical Account*, vol. ix, p. 402). Probably this addition was the porch and west corridor, which are clearly subsequent to the Gordon Tower.

¹ D. MacGibbon and T. Ross, *Castellated and Domestic Architecture of Scotland*, vol. II, pp. 350-3.

² See the contract in Stirling, *Fyvie Castle*, p. 260.

angular tower, which was absorbed as a wing of a long frontage with a corresponding tower wing at the other end. This was the palace of Leslie's date: the building of an additional side and of a central entrance belongs to later times. The rest of the enclosure was plain wall." This description is accompanied by a block plan, in which the development of the building, in accordance with Dr Mackenzie's thesis, is confidently set forth.¹

Unfortunately, a detailed study of the building lends no support to the foregoing theory of its development.

In the first place, there is no likelihood that the Preston Tower ever stood by itself. Its dimensions, a square of no more than 24 feet (excluding the staircase "jam"), are not in the least like those of a free-standing tower-house of a powerful baron of the fourteenth or fifteenth century;² nor does its plan at all resemble that of an early tower-house. In the original scheme, before General Gordon's alterations, the staircase which serves its upper floors was entered directly from the castle courtyard, externally from the tower, an arrangement which clearly shows that the tower was never designed to be a unit in itself. The massive thickness of its walls, upwards of 7 feet, is maintained throughout the lower portions of the front wall of the south range. Clearly this is an ancient curtain wall, to which the gatehouse or Seton Tower has been applied. Positive evidence for this can be seen in the west gatehouse tower, where the inner wall, forming the front of the early curtain, exhibits a steep battered base, about 3 feet high, roughly built with uncoursed boulders, and defined above, where the wall becomes vertical, by two flat, horizontal, narrow courses. Near the doorway into the tower chamber this base has been cloured away, when the gatehouse was built, so as to allow the door to open. Although thickly masked with harl, the battered base reappears on the face of the wall beside the Meldrum Tower. The latter corresponds so closely, in its general arrangements, with the Preston Tower, as to make it clear that both towers, with the curtain wall between them, belong to one design and building scheme, although the work may have been completed in successive stages, as the names of different owners attached to the two towers would appear to indicate. The old lofty barrel-vaulted trance, 9 feet wide, with its thick side-walls, is also part of the early work. The present inner or courtyard front of the south range, as we have seen, is General Gordon's, and is in advance of the frontage which the General took down; but there is evidence which suggests that this frontage itself was not original, and probably it was Seton building. Fortunately, the breadth of the primary south range appears to be preserved by the very thick wall which forms the south side of the first adjoining cellar on the

¹ *The Medieval Castle in Scotland*, p. 153.

² Cf. the dimensions of the Preston Tower at Tolquhon, which originally did stand by itself, and measures 40 feet 6 inches by 29 feet.

west range, labelled "Butler" on the plan, but now forming the furnace-room. The vault of this cellar is lop-sided, being steeper on the south side, where it springs, very awkwardly, from a lower level. Clearly it has been carried up on an older south wall, which can hardly be anything else than a fragment of the north front of the primary south range.

Thus we arrive at an early south range measuring about 27 feet in breadth over the walls, terminated frontally by a square tower at either end and pierced by a portal and trance. It will be observed that the latter is not set centrally in the front range, the length of this range on the west side, from the original portal to the Meldrum Tower, being 46 feet, while the corresponding measurement in the other section is only 43 feet. At Balvenie Castle¹ the portal is similarly to the right of the central point in the front, the reason there being that the old hall was in the left or western portion of the frontal range. So at Fyvie we may infer that the hall was to the left or west of the entrance. Allowing for a reasonable thickness of walls at the first-floor level, and assuming that the Meldrum Tower was present in the original scheme—serving as solar apartments opening off the dais, and reached by the tower stair—there is room for a hall measuring approximately 35 feet by 15 feet. These are very probable dimensions, and may be compared with those of the early hall at Balvenie, 40 feet by 15 feet 8 inches.

The small groined vestibule between the gatehouse towers is, of course, part of Lord Dunfermline's work, and is slightly out of line with the older trance behind. But the extra massiveness of its side-walls, which are over 5 feet thick, is far greater than is required by the stress of the vault—all the more so as its thrust would be counter-stressed by the tower vaults. This circumstance raises the suspicion that these side-walls of the vestibule may embody older masonry, forming piers on either side of the ancient portal, possibly with a pit between them, like the gatehouse at Dirleton Castle, or that at Tantallon in its primary form. An inspection of the vaulting in the west tower, which, unlike its twin, is not masked internally with rough-cast, tends to confirm this suspicion. The extremely awkward arrangement of the springing on the east side strongly suggests that the lower part of the side-wall here is older.

Thus we arrive at a general idea of the early stone castle of Fyvie. It consisted (fig. 4) of a great frontal range, provided with square flanking towers and pierced about midway by the entrance passage, to the westward of which, at first-floor level, was the great hall. Behind this frontal range the castle no doubt tailed off into "laigh bigging," enclosed by a curtain wall. Now that is a very distinctive and datable type of castle. I have elsewhere shown² that this frontal massing of the weight of the

¹ *Proceedings*, vol. ix, pp. 132-48.

² See my paper on "Doune Castle" in *Proceedings*, vol. lxxii, pp. 73-83.

building, and the absorption by it of the gatehouse, are characteristic of large Scottish castles from the end of the fourteenth century onwards, and that it is a type derived from France—whence it spread, in the other direction, as far eastward as the territories of the Teutonic Order beyond the Vistula, where the Castle of Neidenburg (fig. 5), erected about 1400, shows a frontal range very similar to what I conceive was the original scheme at Fyvie. We have seen that in 1395 Sir James Lindsay had masons working at the castle. He was one of the foremost barons of the time, and closely connected with the Crown, being a nephew of Robert II. More than likely it is to him, if not indeed to his predecessor, the King's son, John Earl of Carrick, the Steward of Scotland, afterwards Robert III.,

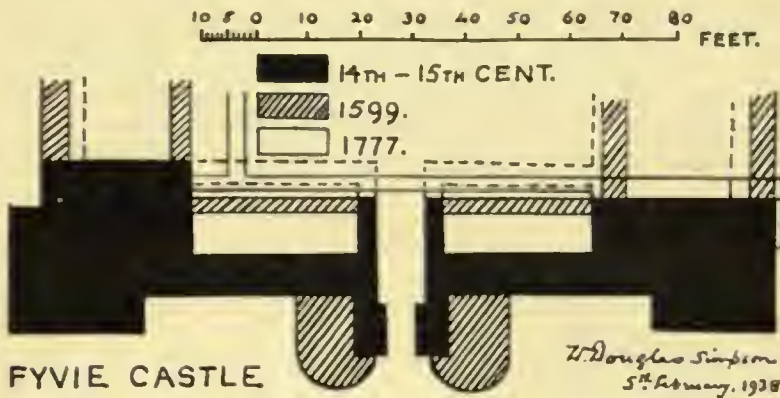


Fig. 4. Fyvie Castle. Sketch plan to show probable evolution of front.

that we owe the conception of the early stone castle. There is no reason to doubt that the Preston and Meldrum Towers are substantially the work of the proprietors whose names they bear, but it is clear that—in accordance with a common mediæval practice—the whole design of the castle was laid down at the outset. In all probability this was the first stone castle on the site. The Fyvie Chastel which the great Plantagenet occupied in 1296 would doubtless be, like the majority of Scottish castles at that early time, a structure of timbered earthwork.

It is idle now to speculate on the reasons which led Lord Dnufermline to reconstruct the fifteenth-century frontal range, reducing its width and subordinating its importance to that of the great western range which he built. We know too little of the state of the castle as he found it. If the names applied to the terminal towers are any guide, the process of building it was prolonged and probably spasmodic,¹ and the original design may never have been completed. Also, it is possible that structural

¹ On 4th November 1508 George Masone witnesses a charter at Fyvie (*Ant. Shires Aberd. and Banff*, vol. II. p. 333). If he was actually a mason, he may have been engaged on work at the castle.

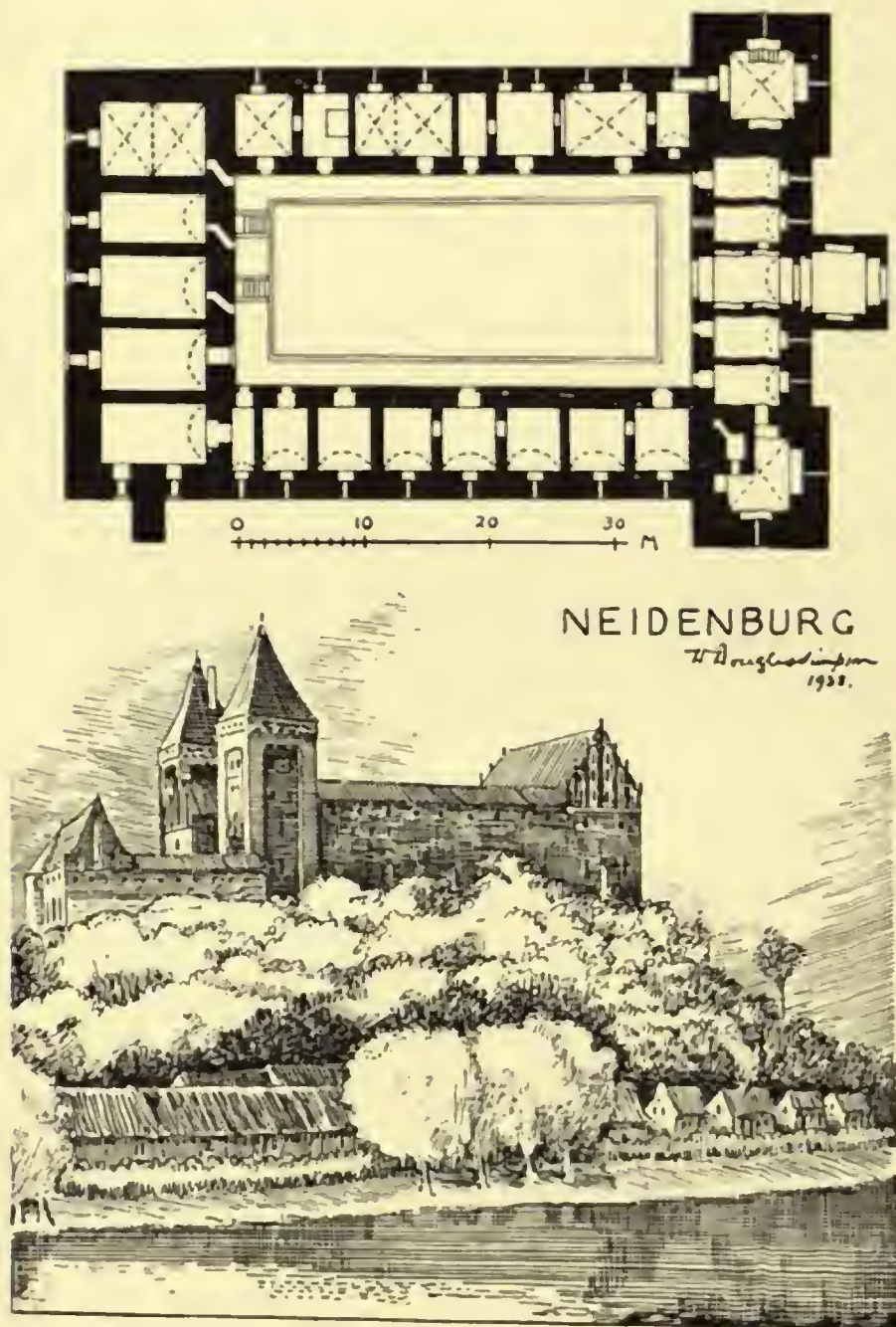


Fig. 5. Neidenburg: ground-floor plan and view.

weaknesses may have developed, especially if the early hall was vaulted, as was the case at Balvenie. In this connection it should be noted that large old fractures exist both in the Preston and the Seton Towers, and that General Gordon towards the end of the eighteenth century found it necessary to strengthen the western range with buttresses. We know nothing about the lay-out of the early earthwork castle, but it is possible that its filled-in ditches may thus have made their presence felt.

In any case, the effect of the Seton reorganisation was to transfer the emphasis of the castle from the front to the western flank, where Lord Dunfermline erected a spacious range, containing full accommodation in accordance with the improved standards of the time—ample cellarage and a kitchen below a dining-room and a withdrawing-room, both conceived on a noble scale and served by the magnificent staircase, with a side-door leading out to what was then the garden. In thus removing the principal residential apartments from the entrance front, Lord Dunfermline was obeying a motive which we can see at work in other cases. Dwelling-houses which were also houses of entry, although they suited fourteenth-century conceptions, were found in practice to be inconvenient. Hence at Llanstephan Castle in Wales and at Dunstaunburgh Castle in Northumberland, in both of which the gatehouse was also the lord's residence, the original portal later was built up and a new entrance provided elsewhere in the *enceinte*. In Scotland the same thing took place at St Andrews Castle. A second instance may be seen at Linlithgow, where the original entrance pierced the hall wing, but was later abandoned in favour of a new entrance in another part. Ireland supplies a parallel at Roscrea. At Caerlaverock, where also the gatehouse was the lord's residence, the reverse procedure was adopted: the gatehouse remained in use as such, but new apartments were erected for the lord on the flanks of the courtyard enclosure. This is in principle what happened in Fyvie.

Among the muniments at Fyvie Castle are preserved an interesting series of plans (Pls. XXXII and XXXIII) evidently prepared for General Gordon, and showing the castle as it existed before his alterations. They therefore preserve the arrangements of the Seton period. Very cursory inspection will show that they are not to be taken as strictly accurate in every detail;¹ but they are of great value as helping us to understand exactly what changes the General made, and in what condition he found the building. We thus learn that the early trance had side-benches, as at Balvenie, and that in the Seton arrangements the wing on either side contained one long cellar, and on the main floor three large living-rooms. On both floors the present partitions, including the eccentric

¹ They were not his first idea, as one of the plans, entitled "a design of the principal floor of Fyvie House," shows that it was proposed to throw the whole of the first floor of the gatehouse into one large room, absorbing everything except the bows of the towers.

setting out of the main gatehouse room, upon which Dr Ross remarked, are thus the work of the General. On the second and third floors, in the Seton building, there were long galleries, 80 feet by 12 feet, extending the whole length of the south range in the fashion so characteristic of the time; they at once suggest a comparison with the gallery which Lord Duffermline built at his other seat, Pinkie House in Midlothian. Like the latter the upper gallery probably had a coved and painted ceiling, partly in the roof.

In the west range the General, having provided a new kitchen in his Gordon Tower, drove a passage through to it under the great stair and took off an internal corridor from the width of the old cellarge. The main floor he left untouched, but on the second floor he provided an internal corridor instead of the old "through-going" arrangement. The upper floor he also reorganised, carrying a central corridor into and through his new tower.

As already stated, the ground-floor plan shows that originally the Preston Tower basement entered directly from the outside, and not from the adjoining stair, as it does to-day. Careful inspection of the present door reveals clear traces that it has been slapped through the west wall of the tower. This was evidently one of the Gordon alterations.

But the most interesting thing which the old plans disclose is that Lord Duffermline planned his castle to be a complete "four-quartered" structure, enclosing a central courtyard and having square towers at the two northern corners. It was a grandiose conception. The outlines of the north and east wings and the two towers are shown on the plan, and as the wings are labelled "ruinous vaults" it is evident that the ground floor at least was completed. Possibly some of this old work is still preserved under the Gordon Tower and its annexes, where there are sundry vaults, but as these are covered with plaster it is not meantime possible to say whether they are ancient or not. It is said that in this quarter stood the chapel. Traces of Lord Duffermline's abandoned intention remain to-day in the return of the corbelled cornice on the north side of the Preston Tower, showing the set-out for continuing it along the inner face of the east wing. At Fyvie, therefore, the great Lord Chancellor might well have put up the same inscription formerly to be read on his other house of Pinkie, recording that he built it "*non ad animi sed fortunarum et agelli modum.*"

Inevitably a comparison is suggested between the two great houses with which Lord Duffermline has enriched the architecture of his country. The inscription above referred to bears the date 1613, and shows that his work at Pinkie was done after he had finished with his northern seat. In both houses he erected two long wings, as part of a complete quadrangular programme never fulfilled. In both an older edifice was absorbed, though



[From the painting by Zuccaro.

Alexander Seton, first Earl of Dunfermline, Chancellor of Scotland.



Fyvie Castle: view of south front.



[Drawn by James Giles, R.S.A., 1838

Fyvie Castle: view from south-west.



Fyvie Castle: the ancient entrance.



Fyvie Castle: view from south-west.



[*Drawn by James Giles, R.S.A., 1841.*

Fyvie Castle: the great stair.

W. DOUGLAS SIMPSON.

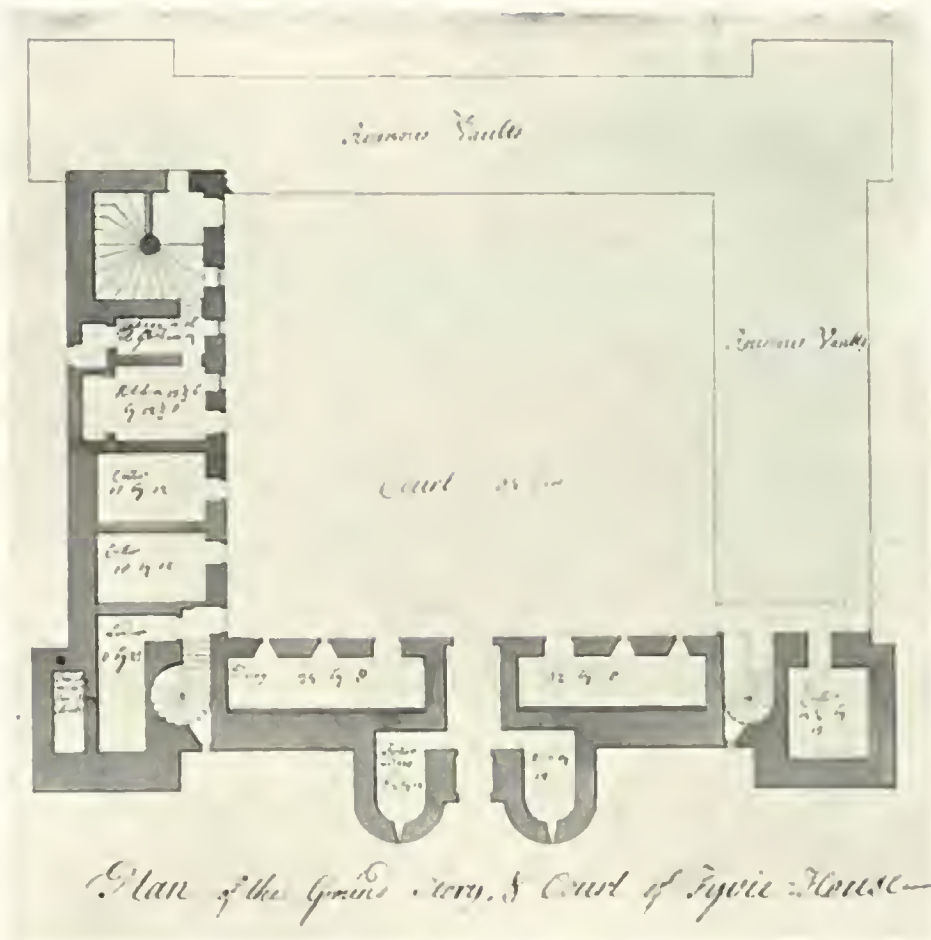
[PLATE XXIX.



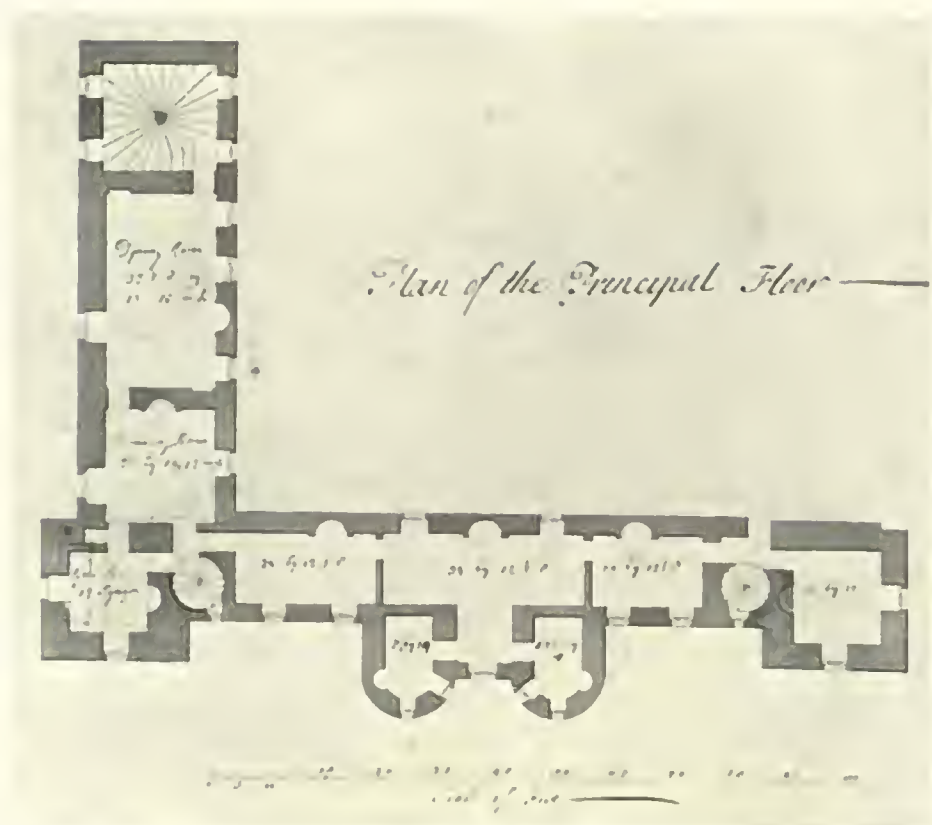
Fyvie Castle: view in charter room.



Fyvie Castle: ceiling in old dining-room.
(This is the room labelled "drawing room" on plan (Fig. 3), and now called the morning room.)



Fyvie Castle: ground plan, ante 1777.



Fyvie Castle: first-floor plan, ante 1777.

these earlier portions have nothing in common in the two edifices. In both houses a long gallery was a prominent feature in Lord Dunfermline's design. But here the resemblances cease. In their external elevations both mansions are characteristically Scottish Baronial, yet Fyvie is as thoroughly Aberdeenshire in the way in which its main masses are resolved on the sky-line as Pinkie is equally typical of the Lothians. In its turrets, corbelling, and minor features, Fyvie clearly belongs to the remarkable north-eastern group which includes Castle Fraser, Craigievar, Crathes, and Midmar. Two of these mansions, Midmar and Castle Fraser, are known to have been built respectively by George and I. Bell, members of a distinguished family of local master-masons. George's tombstone in Midmar Kirk is dated 1575; I. Bell's inscription on Castle Fraser bears the date 1617; and David Bell was doing work at Pitfichie Castle in 1607.¹ I suspect that one of the Bells had a hand in the Chancellor Seton's work at Fyvie. How far the Chancellor himself may have been responsible for elements in the design we cannot tell; but having regard to his strong personality, his high culture, and his special interest in architecture, his influence on the building is hardly likely to have been negligible.

I have to acknowledge the courtesy of Sir Ian Forbes Leith, Baronet of Fyvie, in allowing me to examine the castle and to have access to its muniments, and for information on various points. The blocks for the illustrations of Plates XXIV, XXV, XXVII, XXVIII, XXX, and XXXI, from Mrs Stirling's work on Fyvie, are lent by the publisher, Mr John Murray. Those for Plates XXVI and XXIX are lent by the Council of the Third Spalding Club. The plans at figs. 2 and 3 are reproduced from the survey made by the late J. Russell Mackenzie, architect, Aberdeen, for the sale prospectus of the estate issued in 1886. Since then various alterations have been made in the interior arrangements of the building.

¹ *Reg. Privy Council*, vol. viii, p. 635.

III.

A BARBED POINT OF DEER-ANTLER FROM SHEWALTON,
AYRSHIRE. By A. D. LACAILLE, F.S.A.Scot.

My attention was drawn to a paragraph in *The Irvine and Fullarton Times* of 12th August 1938, reporting the discovery by Mr William Abercrombie, Irvine, in the bed of a river near this town of "part of a fish spear-head got from the horn of an animal, probably a deer." Perusal of the notice suggested to me that the discovery from a locality rich in prehistoric antiquities might be of considerable archaeological importance.¹ I therefore communicated with my friend, Mr J. Graham Paterson, F.S.A.Scot., of the Union Bank of Scotland, Ayr, who resides in Irvine, and asked him if he could obtain the object for my examination. Thanks to him I was able to inspect the relic, which had come into the possession of Mr William Ross, publisher of *The Irvine Herald*. It exceeded expectation in respect of its features and wonderful state of preservation.

Mr Paterson ascertained by interrogating the finder that the antiquity had been recovered from the bed of the river (where it was noticed from the footpath, the water then running low and clear), below the Shewalton sandhills on the left bank, about the middle of the great bend northward.

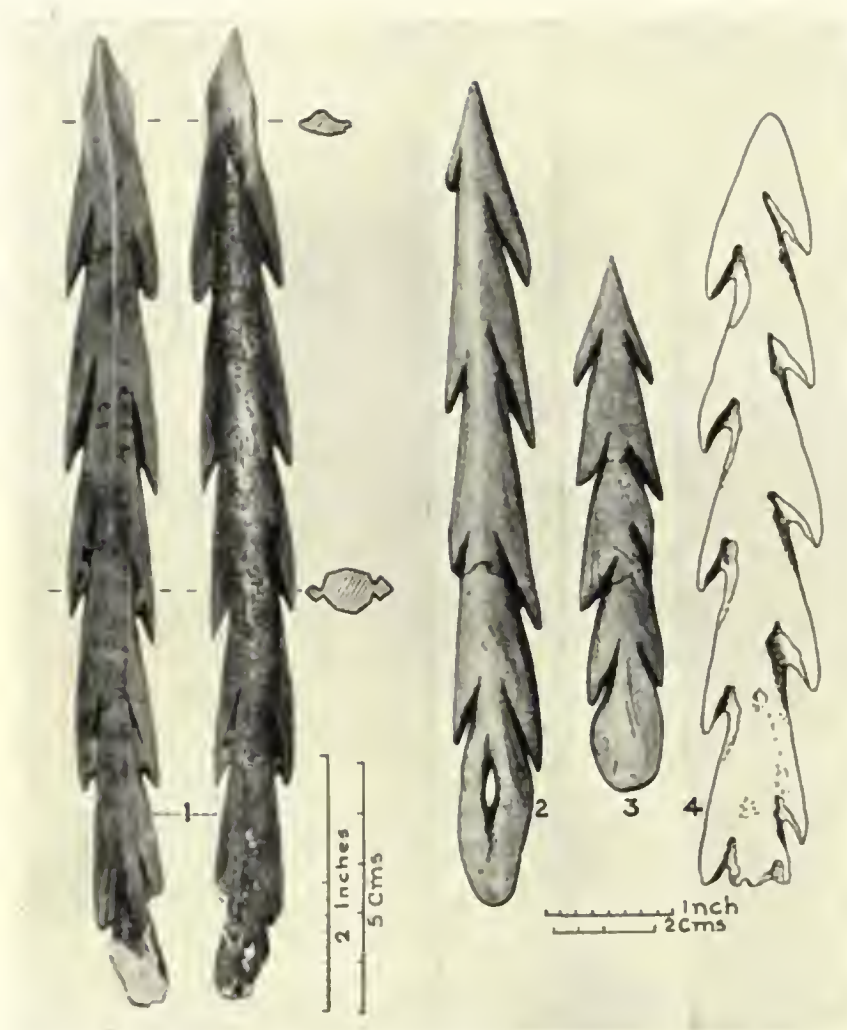
The find consists of a point (Pl. XXXIV. 1), now $7\frac{1}{8}$ inches (0.194 m.) long, fashioned in antler, and provided with five pairs of barbs, the components disposed alternately along each side.² Damaged edges indicate ancient fracture of the extremities of the lowermost pair. Although standing out, the ten barbs are not quite free from the body as they are cut at an acute angle to the long axis. Considering that the implement bears signs of having been shaped and finished by means of stone tools it was made with remarkable skill. One face is smooth, and the other, exposing the cancellated structure of the bony material, partly so.

The slightly damaged base is bevelled and imperforate. It would thus most closely resemble a barbed point, also of deer-antler, with plain butt from the MacArthur Cave, Oban (Pl. XXXIV, 3), and in general appearance and number of barbs it also compares with the largest point with holed

¹ The newspaper account stated erroneously that the discovery was made in the bed of the Annick Water near its confluence with the River Irvine at the "Water Meetings," that is to say on the right bank of the main stream and a little north of the Shewalton Sands.

² I am indebted to Miss Dorothea M. A. Bate, Geological Department, British Museum (Natural History), to whom the specimen was handed for identification of the substance, for the following report, dated South Kensington, 21st October 1938:—

"Dr F. C. Fraser, of the Zoological Department, and I have come to the conclusion that this harpoon from Ayrshire is made from the distal portion of an antler of Deer, almost certainly Red Deer. We reached this opinion after comparing the specimen with sections of antlers of Red Deer and Reindeer, with long bones and with Walrus tusks."



Scottish barbed points of red-deer antler: 1, Shewalton; 2 and 3, Oban (*after Anderson*); 4, Kirkendbright.

base from this Argyll site (Pl. XXXIV, 2).¹ Longer than this example from Oban, the Shewalton specimen, even in its present condition, I believe represents the largest point of the kind so far noted in Scotland, if not in Great Britain. As far down as the last pair of barbs the section of the body may be described as almost rhombic, but thence downward the faces flatten and the section gradually becomes elliptical.

At first sight one would classify this barbed point among the so-called harpoons of Azilian facies recovered by excavation in the caves and shell-mounds of the Argyll mainland and islands. Similarly, it could be ranged with the stray example found in the River Dee and now preserved in Kirkcubright by the Stewartry Museum Association (Pl. XXXIV, 4).² The Shewalton piece, however, has features distinguishing it from others found in this country. Although resembling the points from the MacArthur Cave, and, like them, possessed of a midrib extending from the tip on the polished face half-way down the length and of a similar ridge on the other surface for the length of the head, the extremity also has something of the heads of certain Maglemosean bone points. Thus, it is elongated and rounded at the extremity, instead of being flattish at the tip with the apex simply formed by the meeting of the sides fairly near the uppermost barbs, as is ordinarily the case with Azilian specimens. A peculiarity discernible in the Ayrshire example is the grooving practised lengthwise in the thickness of the material near the tip on each side of the midrib to facilitate penetration. This refinement may well mark a stage in the evolution of weapons and hunting-gear. Another feature consists of a slight swelling, like the spring of barbs, on each side where the tip widens and merges into the body.

A discovery of this kind, although furnishing an important addition to the known distribution of barbed antler and bone points, has its tantalising aspect because of its incompleteness, as it is improbable that the industry which produced such a weapon will ever be known. As the implement was picked up so near the well-known Shewalton Sands, which have proved so prolific in various antiquities proclaiming continuous habitation and much industrial activity, it is permissible to assume that this relic was a product of food-hunters settled there.

To the student of Scottish stone industries of Mesolithic facies the possible association of the weapon with the Shewalton microliths is attractive, although the diminutive artifacts from more than one site here are by facies and workmanship of finer execution than stone implements of Azilian types.³ Nevertheless, as has been demonstrated, the associations of the microliths of Shewalton Moor are such that, in

¹ Joseph Anderson in *Proc. Soc. Ant. Scot.*, vol. xxix, pp. 223-4, figs. 11 and 12.

² Robert Munro in *Archæological Journal*, vol. lxxv, p. 231, and fig. 39, No. 1, p. 232.

³ A. D. Lacaille in *Proc. Soc. Ant. Scot.*, vol. lxxiv, pp. 34-48.

addition to the advanced forms which occur, they may well represent a tradition surviving as late as the Bronze Age.¹ Still, it would not be surprising if ancient sorts of artifacts were also manufactured by the same people. This view finds support in the occurrence among the stone implements from Shewalton of tools suitable for working bone. The isolation of the north-western focus of industries influenced by ancient cultures and different contacts permits one to envisage the probability of hybrid and mixed contexts.

In respect of Scottish antler and bone points it will be recalled that the Abbé H. Breuil drew attention to the fact that the Oronsay "harpoons" seemed to have affinities with Baltic types.² In his reference to the various artifacts made of osseous substances from these and other Scottish sites Professor V. G. Childe has expanded on the subject.³

For the drawing of the Kirkcudbright implement found, it is believed, as fortuitously as the one forming the subject of these notes, I am indebted to our Fellow, Mr J. Robison, Kirkcudbright.⁴ Finally, thanks are expressed to Mr Ross for permitting me to study and describe the barbed point exhibited this evening. It is gratifying to note that this has now been added to the national collection.

APPENDIX.

Dr J. G. D. Clark, in his masterly survey of Maglemose bone work, has advanced reasons against the loose naming of all barbed bone points as harpoons.⁵ As this piece from the bed of the River Irvine may perhaps have formed part of a composite device, I have refrained from using a term employed widely to describe such gear.

¹ J. G. D. Clark, *The Mesolithic Age in Britain*, p. 51.

² *Proc. Soc. Ant. Scot.*, vol. lvi, pp. 279-81.

³ *The Prehistory of Scotland*, pp. 16-19.

⁴ This has not been figured in our *Proceedings*, but is illustrated half-size in the late Dr Munro's communication, *cit. supra*, p. 49.

⁵ *The Mesolithic Settlement of Northern Europe*, pp. 115-22.

IV.

TWO HOARDS OF SILVER COINS FOUND AT BRIDGE OF DON,
ABERDEEN, AND AT DUNBLANE, PERTHSHIRE. BY
ROBERT KERR, M.A., F.S.A.Scot., CURATOR OF COINS.

On 20th November 1937, a workman named Robert Livingston, of Newton of Duncricht, while engaged in digging for the foundations of a new house to form part of a housing scheme on the north side of the River Don, near Bridge of Don, Aberdeen, struck with his pick an earthenware vessel containing a hoard of silver coins. Over the vessel had been laid cobbled paving, above which had accumulated 3 feet of dark soil. About 14 feet north of the paving traces of a hearth were found, with quantities of peat-ash. The vessel was a small handled jug of red clay, green-glazed on the exterior, with a pinched foot-rim. Unfortunately the jug was smashed by the workman's pick, but the number of fragments preserved and sent to the National Museum was sufficient to indicate its shape and height (about 6 inches). Of the hoard which it contained, 197 coins were collected by Dr W. Douglas Simpson, of the University of Aberdeen, who had been notified of the discovery by a work-mate of the finder, and were remitted by him to the National Museum for examination. The coins, along with the fragments of the jug which had contained them, were purchased for preservation in the Museum.

The hoard consists entirely of groats. Only five coins are Scottish, the remainder being English. A low proportion of Scottish coins to English is usual in hoards of this kind.

The following is a summary of the hoard:—

SCOTTISH GROATS.

David II.	Edinburgh.	Burns, fig. 281	.	.	.	1
"	"	" " 302	.	.	.	2
Robert II.	"	" " 309	.	.	.	1
James I.	"	" " 428	.	.	.	1
—						5

ENGLISH GROATS.

EDWARD III.

<i>London Mint</i>	.	.	.	.	.	31
Uncertain Edward III./Richard II.	.	.	.	.	.	5
<i>York Mint</i>	.	.	.	.	.	4
—						40

HENRY V.

<i>London Mint</i>	20
	— 20

HENRY VI.

London Mint.

Annulet Issue	9
Rosette-Mascle Issue	1
Leaf-Pellet Issue	1
Cross-Pellet Issue	2

Colais Mint.

Annulet Issue	77
Annulet-Trefoil Issue	2
Annulet-Rosette Issue	2
Rosette-Mascle Issue	22
Rosette-Mascle Issue (?)	1
Pinecone Mascle Issue	9
	— 126

EDWARD IV.

London Mint.

Heavy Coinage of 1461-64	3
Light Coinage of 1464-70	3
	— 6
	<hr/> 197 <hr/>

Nearly all the coins, not excepting the latest in date, are clipped. The earlier coins are badly worn. The Scottish specimens are all clipped, and in very poor condition.

The date of issue of the latest coin in the hoard is about 1466. As this specimen is clipped, and shows signs of considerable wear, it seems justifiable to suppose that the hoard was deposited a year or two later. Comparable hoards have been found at Stamford (*Num. Chron.*, 1911, p. 153), Guisborough (*Num. Chron.*, 1896, p. 72), and New Cumnock (*Num. Chron.*, 1882, p. 354).

I am much indebted to Mr Derek Allen of the Department of Coins and Medals, British Museum, for assistance in the description of the hoard.

HOARD OF SILVER COINS FOUND AT DUNBLANE.

On 8th December 1937, Mr Andrew Fleming, of Barbusli Farm, near Dunblane, while working along with an employee amongst the sand in the

quarry on his farm, found nine small silver coins. On the 24th of the same month, eighty-three further coins were found at a distance of a few feet from the first find-spot. Examination of the coins makes it clear that the two groups belonged to one hoard.

On Barbusk Farm there are several high knolls, composed almost entirely of clean sand. The largest of these knolls, about 150 yards in length and 80 feet high, lies east and west, and affords a commanding view to north and south. The old north-south route passed close to the east end of this knoll. The coins were found near the highest point of the knoll, at a depth of 4 or 5 feet. No trace of any receptacle was discovered.

Mr Fleming noticed that the sand at the spot where the coins were found was not so pure as the sand round about; it appeared to be mixed with surface soil, and this sand-soil mixture followed what he thought was the line of a trench running from north-east to south-west. Two flat stones, foreign to this part of the farm, each about 18 inches square and 3 inches thick, were found a few feet apart at what seemed to Mr Fleming to be the bottom of the trench.

The hoard, which was sent to the National Museum for examination, was found to be composed entirely of silver pennies. Only two were Scottish (Alexander III.). The great majority (86) were English coins of Edward I. and Edward II. Three were Irish, of Edward I.; and there was one Anglo-Gallie coin of Edward II. None of the coins were suitable for retention for the National Collection. The hoard was probably buried soon after the year 1324.

The detailed inventory of the coins is as follows:—

SCOTTISH.

ALEXANDER III.

Burns, fig. 167	1
„ „ 178	1
	— 2

ENGLISH.

EDWARD I.—II.

Bristol	3
Bury St Edmunds	5
Canterbury	22
Durham	11
Kingston	1
Lincoln	1
London	33
Forgeries	2

Newcastle	.	.	.	.	.	.	.	.	2
York, Royal	.	.	.	.	.	.	.	.	3
Berwick	.	.	.	.	.	.	.	.	3
									— 86

IRISH.

EDWARD I.

Dublin	.	.	.	.	.	.	.	.	2
Waterford: London-Waterford mule, perhaps a forgery	.	.	.	.	.	.	.	.	1
									— 3

ANGLO-GALLIC.

Edward II.	.	.	.	.	.	.	.	.	1
									— 1
									—
									92
									—

The hoard contains no rare coins which are genuine. The three forgeries are, however, of interest.

I am indebted to Mr Derek Allen, of the Department of Coins and Medals, British Museum, for valuable assistance in the identification of the coins.

MONDAY, 9th January 1939.

THE HON. LORD ST VIGEANS, LL.D., Vice-President,
in the Chair.

A Ballot having been taken, the following were elected Fellows: Mrs Ellen R. Ferris; Robert D. Gray; William McIntosh; Captain William Mackay; Lieut.-Colonel George Ramsay Maitland of Burnside; Robert B. K. Stevenson, M.A.; John Philip Stewart, M.D., F.R.C.S.Ed.; John L. Weir, M.A.

Donations to the Museum and Library, as per lists at end of volume, were intimated and thanks voted to the Donors.

Purchases for the Library, as per list at end of volume, were announced.

The following Communications were read:—

I.

AN IRON AGE SITE AT AIGNISH, NEAR STORNOWAY.

By E. CECIL CURWEN, M.A., M.B., B.Ch., F.S.A.

While on a holiday in Stornoway early in August 1937, the writer was walking through a disused sand-pit situated about 200 yards south-west of the ruined Eye Church at the seaward end of the spit of sand which connects the Eye peninsula with Lewis. The chance discovery of a few shards of early pottery led to the finding of a hearth and small midden-heap protruding from the northern face of the pit at a level about 9 feet below the present surface. The site when occupied had been situated on the sandbank, and had subsequently been covered by drifting sand.

The hearth, part of which had fallen away down the talus of sand, consisted of a slab of local red clay, $2\frac{1}{2}$ feet wide as exposed in the section, and nearly 3 inches thick, and upon this a pile of local water-rolled boulders, most of which had been cracked and split by heat. Among these stones was a quantity of peat-ash and a single small piece of unburnt peat. No recognisable wood-ash was observed.

The hearth was situated midway between what looked like the footings of two small walls, $6\frac{1}{2}$ feet apart (internal measurement), that on the right (east) consisting of three courses of unhewn stones, each about 4 inches thick. The interspaces between these walls and the hearth showed on the section a dark layer containing pottery and animal bones at a level from 3 to 6 inches above that of the top of the clay base of the hearth, but roughly level with most of the peat-ash. This dark layer appeared to represent the floor of the dwelling contemporary with the hearth. After the destruction of the hut, if such it was, the site had been covered with sand, but there was a reoccupation, marked by a dark layer about 18 inches above the clay base of the hearth, and stretching above the latter and a few inches above and beyond the eastern wall-footing. This upper occupation layer contained a pile of snail-shells, animal bones, and pottery similar in character to that found in the lower layer.

Among the stones of the hearth were found, besides pottery, a

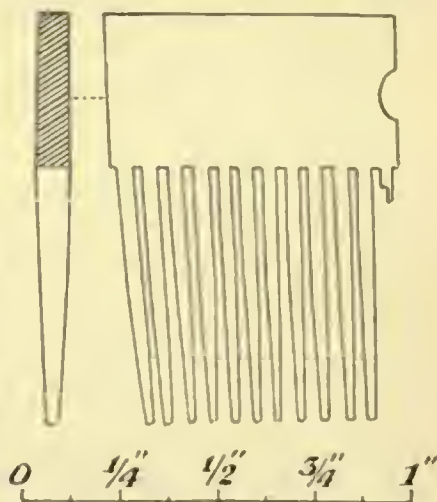


Fig. 1. Fragment of bone comb, Aignish.

fragment of a bone comb (fig. 1), the head of a very large iron rivet or bolt, fragments of a flat piece of iron, and some bloomery cinder.

The comb, Mr A. J. H. Edwards tells me, is attributable to the early part of the Christian era, and it resembles combs found on Roman sites in England, but not earlier.



Fig. 2. Pottery shards from hearth at Aignish.

The iron bolt-head measures 1.5 inch by 1.2 inch and 0.2 inch thick; of the bolt itself the surviving piece is 1 inch long and 0.3 inch diameter, round in section. It is possible that what has been taken for the flat head is actually a piece of flat iron through which the bolt had been driven.

The other fragment of flat iron is about 2 inches by 1.5 inch and up to 0.4 inch thick, and is of nondescript character, giving no indication as to what it has come from.

The bloomery cinder has been submitted to Mr Ernest Straker, F.S.A., who has kindly had it analysed by J. Gilles of Neiderschelden, Nassau (Germany), who reports that it consists of "drops of cinder which contain

crystalline enclosures of sand, or iron ore, or roasted iron (probably bloomery)."

The pottery has been submitted to Mr A. J. H. Edwards at the National Museum of Antiquities at Edinburgh, and he reports that the shards are all of a type which can be obtained from various localities in the Outer Hebrides, and that they are probably contemporary with the earth-houses and the brochs, and that they should be referred to the early part of the Christian era. The rims are mostly straight in profile, and flat-topped, and there is a lack of decoration. Several characteristic shards are here illustrated for purposes of record (fig. 2). The pots were hand-made, and the fabric is sandy, being red, buff, grey, or black. A few red pieces have what looks like a smooth slip. Dr J. Wilfrid Jackson thinks that these shards resemble in some respects the pottery he has excavated in northern Irish souterrains and caves, making due allowance for differences in paste.

The bones from the hearth and midden have been submitted to Dr J. Wilfrid Jackson, F.Z.S., who has kindly reported on them to the following effect: The bones represent Sheep, small Ox (suggestive of the Celtic ox type), Red Deer, small Horse, Pig, Cetacea, and Codfish. These would agree with the Early Iron Age or Roman material of southern Britain, and also with the Iron Age material from the coastal caves of Northern Ireland.

The shells have been submitted to Mr A. S. Kennard, A.L.S., F.G.S., who has kindly identified them as follows:—

(a) *Marine mollusca.*

<i>Littorina littorea</i>	Linn. (winkle)	.	.	abundant.
<i>Patella vulgata</i>	.. (limpet)	.	.	1 example.
<i>Cardium edule</i>	.. (cockle)	.	.	1 valve.
<i>Mytilus edulis</i>	.. (mussel)	.	.	1 valve.
<i>Ostrea edulis</i>	.. (oyster)	.	.	3 valves.
<i>Macra stultorum</i>	..	.	.	1 valve.

(b) *Land mollusc.*

Xerophila itala Linn.

These various details are here recorded from the realisation that it is only by such records that it may ultimately become possible to construct a chronological picture of the Scottish Iron Age. The material from this site has been deposited in the Museum of the Nicholson Institute at Stornoway.

II.

THE CASTLE OF CLOUNIE CRICHTON, KINCARDINESHIRE.

By J. FENTON WYNESS, A.R.I.B.A., A.R.I.A.S., A.I.L.A., F.S.A.Scot.

About 4 miles east of the village of Torphins, on the north side of the Aberdeen-Torphins road, stands the picturesque, ivy-clad ruins of Clounie Crichton Castle (Pl. XXXV, 1). The castle is situated in the parish of Bauchory-Ternan, Kincardineshire, and commands an extensive view of the surrounding country from its site on the lower slopes of the south side of the Hill o' Fare. Clounie Crichton is now incorporated in the estate of Raemore, and, although completely ruinous, is an interesting example of a Scottish laird's "house-of-fence" of the seventeenth century. The castle is built on a modification of the familiar L-plan with an additional rectangular staircase-tower set in the re-entrant angle (see fig. 1). The material used in the building is rough granite surface gatherings taken from the hillside on which it is situated, and these have weathered to a fine warm pink colour, which blends in an unusually charming way with the surrounding landscape. Originally, Clounie Crichton Castle would have been surrounded by a wall enclosing a courtyard containing the subsidiary buildings necessary to such an establishment, but any traces of these have long since disappeared, and the castle now stands out boldly from the surrounding agricultural land.

The entrance doorway is in the west side of the staircase-tower already referred to, and is well defended by three gun-holes—one in the west wall of the re-entrant angle of the main building, one in the north wall of the re-entrant angle, and the third at a higher level in the same wall. This latter is worthy of special attention, as it is particularly cunningly concealed and directed to cover the entrance doorway. The gun-holes have plain circular orifices 5 inches in diameter externally with a fairly wide inward splay (see Pl. XXXV, 5).

The entrance doorway (see Pl. XXXV, 4) is in rather a dilapidated condition, but the remaining jamb stones show a $2\frac{1}{2}$ -inch splay, while inside are the remains of the barholes measuring 7 inches square. The bar socket is on the south side of the door and extends 7 inches into the wall, the bar-hole proper being on the north side and extending about 5 feet into the wall.

Unfortunately the jamb stones on the north side of the entrance doorway have gone, as indeed has practically all the dressed stonework of the building, including the quoins, lintels, and jambs of the doors, windows, and fireplaces. The removal of the dressed work has been a gradual process carried out from time to time, as building materials were required for the neighbouring farm-standing.

The entrance doorway gives access to a small barrel-vaulted passage 3 feet 6 inches wide, off which are three rooms, while at its north-west extremity is situated the remains of the newel staircase which served the whole building. This newel staircase is no longer in existence, but traces of the stone steps are still discernible, while the loopholes which lit the stair are still extant.

To the north-east and south-west of the barrel-vaulted passage are two storerooms measuring 15 feet 11 inches by 17 feet 3 inches and 15 feet 5 inches by 17 feet 1 inch respectively. The storerooms are lit by two loopholes and have each a gun-hole, already referred to, to cover the staircase-tower and entrance doorway. At the south-east extremity of the passage is the kitchen, measuring 17 feet 1 inch by 17 feet 2 inches. It is lit by two loopholes, and in the north-west wall are the remains of an open stone fireplace measuring about 4 feet 6 inches wide, while between it and the south-west wall is an masonry measuring 1 foot 6 inches wide by 1 foot 6 inches high by 11 inches deep. An unusual feature at Clounie Crichton is that the basement, with the exception of the entrance passage, was not barrel-vaulted, as was general in castles of this period, so that now all the floors of the building have gone, but the joist-holes remain to indicate the various floor-levels. In consequence of this none of the upper floors are accessible except with the aid of a ladder.

The first floor was reached by the newel staircase already mentioned. There was a small landing at the first-floor level, off which opened the hall or dining-room of the castle. Through the hall access was obtained to the two other rooms on this floor. These rooms have no direct communication with the newel staircase. The hall measures about 15 feet by 17 feet and is lit by two well-proportioned windows—one in the north-west and one in the south-west wall. In the north-east wall is a smaller window, while alongside it is the gun-hole which covers the entrance doorway. In the south-east wall of the hall



SECOND FLOOR



CLOUNIE CRICHTON CASTLE. FIRST FLOOR



GROUND FLOOR



Fig. 1. Plans of Clounie Crichton Castle.

are the remains of an open stone fireplace with a doorway, leading through to the withdrawing-room, on its south-west side.

The withdrawing-room is about 17 feet square and is lit by two windows of similar proportions to those in the hall. These windows are situated in the north-east and south-east walls, while in the north-east wall is an open stone fireplace 4 feet wide. At the north-west angle of the withdrawing-room is an interesting apartment of small dimensions. This chamber served as the strong-room of Clonnie Crichton Castle, and measures 2 feet 1 inch wide in the centre, increasing in size at its north-west extremity to 4 feet, its length being 5 feet 3 inches. The strong-room is barrel-vaulted, and, as it is situated directly over the barrel-vaulted passage below, is rendered practically fireproof. The remains of the door hinges can still be traced on the north-east jamb. Strong-rooms such as these were very often features of castles of a like date to Clonnie Crichton; similar ones may be cited at Leslie Castle (1661) and at Craigievar Castle (1626), although in the case of the latter the strong-room assumed rather larger proportions.

In the north-east wall of the withdrawing-room is a doorway linking it up to a private room. The dimensions of this room are about 16 feet by 17 feet. It has fragments of an open stone fireplace in the south-west wall. In the north-east wall is a window of similar design to those already mentioned in the hall and withdrawing-room, while to the east of this window is an annbry measuring about 1 foot 9 inches square and extending into the wall about 11 inches. In the north-west wall is a small window set back in an intake.

The second storey is in rather a dilapidated condition, but it would appear to have consisted of three bedrooms of similar dimensions to the rooms on the floor below. Each bedroom is lit by two good-sized windows, while the north-east and south-west rooms have each an additional window of smaller size which could serve as gun-loops should occasion arise, as they directly cover the entry to the castle. Each bedroom is furnished with an open stone fireplace and garderobe, the south-west one having, in addition, a mural cupboard in its north-east wall. The manner in which access to the rooms on the second floor was gained is a matter of speculation as there appears to be no trace of any doorway from the newel staircase to this floor. This would mean that access was gained by way of a wooden staircase, since demolished, and in all probability this was so. The intake in the wall of the private room on the first floor may indicate the position of such a staircase, as a similar intake occurs on the floor above. The level of the two small windows in the private room and in the north-east bedroom would seem to strengthen this theory. The suggested position of the wooden staircase has been indicated on the plans.

Above the second floor there had been a "garret," reached either by



1. View from the south-west.



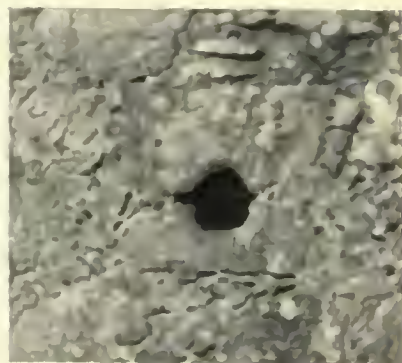
2. View from the south-east.



3. View from the north-west.



4. Entrance door with coat-of-arms
recess and carved stone panel above.



5. Detail of gun-hole.



6. Carved stone panel with inscription.

a wooden stair or from the newel staircase. All trace of this "garret" floor has disappeared, but from the remaining masonry on the staircase-tower it is obvious that the building contained a "garret." The staircase-tower is carried up a storey higher than the main building and had probably been finished with an open ballustrading similar to that at Craigievar Castle.

The exterior of the structure has suffered as much as the interior, as practically all the dressed stonework has been removed. Where the dressed stonework remains, however, it is of a particularly high standard of workmanship. Above the entrance doorway are two recesses which had originally held the coat-of-arms of the Crichton family, with, in all probability, the royal arms of Scotland, as the feudal superior, situated above (see Pl. XXXV, 4 and 6). Between these two recesses is a finely carved panel which reads—

16 CLOUNIE 66
CRICHTON.

Clounie Crichton Castle is rapidly falling into complete decay, but even in its present dilapidated condition retains something of its former dignity, and is certainly deserving something better than the fate that is fast overtaking it.

There seems to be little of historical interest connected with the castle which was built, as the above-mentioned panel states, in the year 1666 by George Crichton of Cluny.

George Crichton of Cluny, a cadet of the Frendraught family, married in 1665 the only daughter of Sir Robert Douglas, of Tilquhillie, whose seat, Tilquhillie Castle, is situated four miles south-east of Clounie Crichton. How long Clounie Crichton remained the property of George Crichton is at present obscure, but the name of Crichton would seem to have disappeared from the district shortly after the building of the castle.

In preparing this survey I have enjoyed the assistance of my friend, Mr W. A. Cramond, Aberdeen, to whom my grateful thanks are due, and to John Alexander, Esq., Cluny Crichton Farm, Bauchory. I tender my indebtedness for providing the necessary facilities.

III.

REPORT ON EXCAVATION AT MONZIE. By ALISON YOUNG, F.S.A.Scot., AND MARGARET CRICHTON MITCHELL, M.A., Ph.D., F.S.A.Scot.

An opportunity arose in August 1938 to excavate the standing stones in the policies of Monzie Castle, Perthshire. Nine stones appeared above the turf in the form of a rough circle, the highest showing little more than 2 feet. One of these stones, a boulder of schistose grit which later proved 4 feet in depth, was carved on top with deep cups with connecting channels (Pl. XXXVI, 2). This stone formed a part of the circle though actually within the arc of a line taken through the centre of the other standing stones and giving a diameter of 17 feet. Pl. XXXVI, 1 shows the outlier, at a distance of approximately 15 feet from the centre of the circle, measuring from the centre of the ring-marked stone. This is a boulder of metamorphosed grit covered with cup and concentric rings, some channelled, some cups alone and one well-preserved and unusually deeply cut single ring round a cup, this had been covered by turf. The stones are shown on a plan given by Romilly Allen,¹ and on the 6-inch ordnance map, $\frac{2}{3}$ mile S.S.E. of Monzie and 300 yards from the East Lodge. They lie on the 400 feet contour on fairly level ground between the Shaggie Burn and the Knock of Crieff which rises sharply to 911 feet.

The geological description kindly given by Dr Simpson describes the stones as "situated on a high level sand and gravel terrace of fluvio-glacial origin deposited by the melt waters of ice which was retreating northwards in the Shaggie Burn and westwards in the Earn and Turret valleys. As the ice advance had been from the west, the boulder content of these terraces comprises schistose grit rocks of highland origin as well as examples of the more local rocks. The geological formation at the site is Lower Old Red Sandstone, and rock outcrops are frequent; three distinct rock types are to be noted: (a) volcanic rocks northwest of Monzie, (b) coarse conglomerate with pebbles of lava, and (c) fine grained sandstones and marles with limestone concretions starting at Gilmerton about $\frac{1}{2}$ mile S.E. of the site."² Approximately 300 yards west of the stones is a standing stone 4 feet 9 inches at the highest point, and 12 feet in circumference at ground level.

The standing stones are, without exception, set with the broad faces on the arc of the circle which measures 17 feet in diameter.

For the purposes of examination the site was enclosed in a 45-foot square, a central turf strip of 1 foot was retained, and numbered 3-foot strips were taken from this key to the edge of the square.

¹ Romilly Allen, *Proc. Soc. Ant. Scot.*, vol. xvi, p. 90; Coles, *Proc. Soc. Ant. Scot.*, vol. ix, 8, iv, p. 82.

² *Ibid.*, vol. ix, 8, iv, p. 82.



1. Ring-marked boulder at Monzie.



2. Stone 1.



3. Stones forming clst.



1. Showing cist to right of marked stones.



2. Sand level showing two stones from loam level (marked by dots).

Fig. 1 shows the stones which appear above turf level marked black, and the stones which lay immediately below turf level and within the circumference of the circle in outline. The latter were of varying size and were set



Fig. 1. Circle at Monzie: plan at loam level.

in the loam in haphazard fashion. At this level a causeway appeared between the ring-marked slab and the standing stones. The stones of the causeway were of different sizes, and were laid at the natural angle of repose on one level; this could not be called a paving, nor were the stones hard-set as in cobbling.

After consideration stones A, B, C, and D were discarded as no part of the original monument, A and B resting on the turf; these had most probably

been brought in off the field after causing some obstruction to agriculture. The disturbed area proved to be the fairly recent burial of a sheep, happily well defined. Within the circle, in the grass roots immediately below the turf, were the remains of at least two bottle decanters of free blown glass which Mr Thorpe of the Victoria and Albert Museum dates *circa* 1700; outside the arc were several sherds of mediæval glazed ware. In the mixed filling were found two lumps which Dr Desch identifies as bloomery slag. Charcoal was scattered over all. Small pieces, apparently twigs or brushwood, occurred outside the arc on the east while large lumps were found on the west and within the circle. Mr Orr of the Royal Botanic Garden has kindly reported on the charcoal which is in a very large proportion hazel. In one lot of charcoal sent for examination, 374 pieces were of hazel, 11 of Scots fir, and 3 of oak. This preponderance of hazel is noteworthy.¹ In Mr Hemp's report of Bryn Celli Dhu, Dr Hyde "particularly noted the extraordinary abundance of hazel."

Fragments of burnt bone occurred at this level, while outside the arc, in the loam, one flint flake and a small piece of cannel coal were found.

A key trench dug outside the stripped area showed the natural stratification as gravelly loam approximately 16 inches below the humus; a 6 inches to 9 inches band of sand, and below this sandy gravel. The section (fig. 4) demonstrates the different levels inside the circle. Taken from the bottom upwards, there is a floor of sand over the entire area corresponding to the natural stratification but apparently added to in the centre; against stone 1 a dark loam stretches for $2\frac{1}{2}$ feet, meeting the gravel which in the key trench was the sub-soil or natural, and here overlies the sand. This dark loam appears at the west side against stone 7. Above the gravel a gravelly-loam stretched across the whole area underlying the black layer. (The line of the section does not touch the black level.) This black layer was a compacted black substance of which fig. 2 shows the extent. It was of varying thickness, the greater part about 1 inch in depth widening to 5 inches at the edge, and contained many fragments of burnt bone and charcoal; it was defined by a thin red crust above and below and was apparently due to extensive fire. Above the black layer the earth was a mixture of loam, sand, and gravel which gave the impression of a random infilling of the three soils natural to the site.

Immediately over the black layer was a rim sherd (fig. 4), and in the compacted black substance another rim sherd was found at a distance of 2 feet. These are dealt with in a separate report. Two feet from stone 5 this black layer split, the upper portion continuing out to the stone, the lower sloping to the base where it widened to 3 inches. This sealed a clean gravel in which lay small boulders, such as were found wedging the base of all the standing stones. Above this double black layer occurred

¹ *Archæologia*, vol. lxxx. p. 214, Hemp.

the only hint of post holes found on the site, two breaks in the upper level but not piercing the lower, filled with dark earth.

Below the causeway a slab was exposed, midway between the cup and ring-marked outlier and the circumference of the circle (fig. 2). This was raised and found to cover disturbed earth down to sand level. The outlier stone had wedge stones packed in mixed earth, as though to steady it in position. No evidence of its having stood upright could be found.

In fine black earth so noticeably free from stones as to suggest turf or moss packing, and which we found nowhere else on the site, there appeared a stone which proved to be the diorite cover of a rudimentary form of cist, shown in fig. 2; the sides of the cist were formed by four stones laid on the sand (Pl. XXXVI, 3); the space between them was closely packed with comminuted burnt bone and fragments of the mottled quartz¹ which was such a feature of the whole site. Professor Waterston examined the bone fragments and distinguished two individuals, an adult and a child

of six to eight years of age.² "The heat to which these bones had been exposed must have been very considerable and prolonged."

At this level outwith the arc, there appeared two curious patches of black earth which had an odd consistency like greasy powder. One occurred

¹ Among references to quartz in connection with burial: *Archæologia*, vol. lxxx, p. 193; *Proc. Soc. Ant. Scot.*, vol. vi, p. 313; vol. xxx, p. 201; vol. xxxii, p. 216; vol. xxxvi, p. 635; vol. xxxvii, p. 60. Compare double cremation at Ury.

² *Proc. Soc. Ant. Scot.*, vol. lxxix, p. 386.

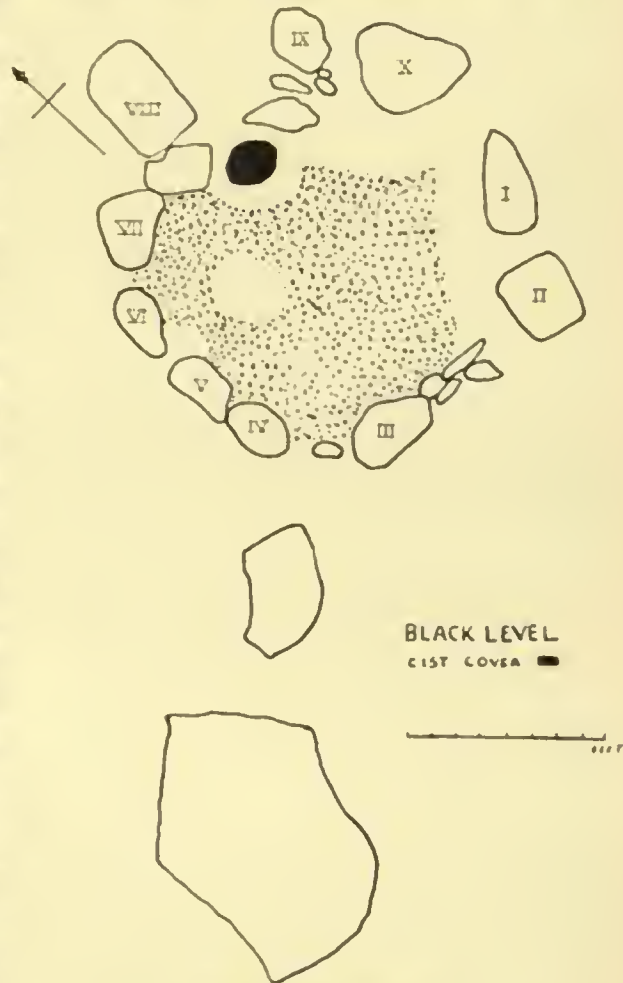


Fig. 2. Plan at black level.

between stones 6 and 7 and had three small sandstone slabs over it but no stone defining it; it contained two fragments of bone among a quantity of unrolled quartz mixed with black earth and large charcoal lumps. The larger of these fragments is unidentifiable and apparently not calcined, the surface has what Professor Waterston calls a "soapy feeling." The other patch was at the base of stones 4 and 5. This was defined by water-worn pebbles and covered by a split stone of metamorphosed grit 10 inches by 4 inches. The same greasy powdered earth and quartz chips were found here, but neither bone nor charcoal.

Fig. 3 shows the stone settings at sand level, below which we found no evidence of disturbance. The four stones of the little cist are marked in black. These were green water-worn pebbles of metamorphosed grit on the north and south, and red felsite on the east and west. The colouring was very striking on removing the cover slab when the stones were wet. Big lumps of unrolled quartz were closely packed end to end inside the broad bases of the standing stones, too regularly to have been accidental. These packings were at or below the black layer against stones 3, 4, 5, and 6, and with the exception of 3 were in charcoal and dark earth. Stone 2, which had fallen outward and which was subsequently raised as far as possible in its socket, had a pocket of quartz at its base, and at stone 10, which had also fallen outwards and jumped its socket, there were two pockets of sharp quartz lumps, one numbering 70 stones. Large quartzes had also been packed under the overhanging edge of the cup and ring-marked slab.

The stone on the north side shown in figs. 2 and 3 had also fallen outwards, but this could not be raised with the means and man-power at our disposal. This outward tilt was observed in all the standing stones.

No evidence of a ditch could be traced. The standing stones 1, 2, 3, 4, 6, 8, 9, and 10 were all bedded in sand, while 5 and 7 are on the gravel, the sand having been moved in the course of their erection. This would account for the disturbance shown on the west side of the section (fig. 4). The cist must have been laid when the area was stripped so as to present a compact floor of sand. From the character of the quartz packing round the ring-marked slab and the stones of the circle, the setting of these would appear contemporary. The two black layers enclosed sandy gravel free from any appearance of disturbance at stone 5, the lower was compacted, and ran out to the base of the stone; therefore, presumably, a short time elapsed between the first and second fire; this is borne out by the appearance of the narrow black layer with red crust above and below and with no hint of intervening deposit. The sherds were found in and lying on this black level, and it would appear that the circle, cist, black level and sherds are contemporary. This circle conforms to the last stage of Dr Callander's typology of megalithic monuments,¹ and the Iron Age

¹ *Archæologia*, vol. lxxvii. p. 97.

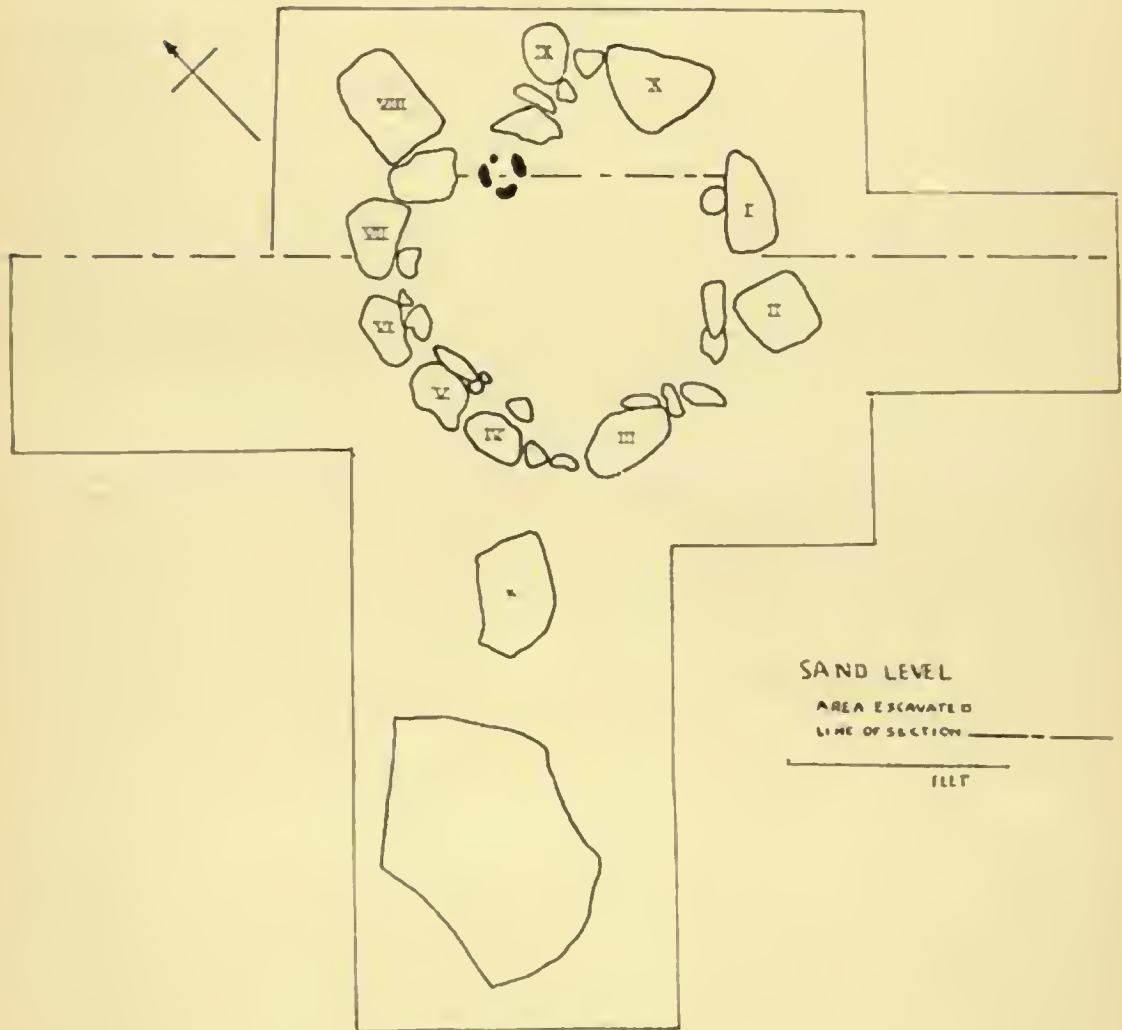


Fig. 3. Plan at sand level.

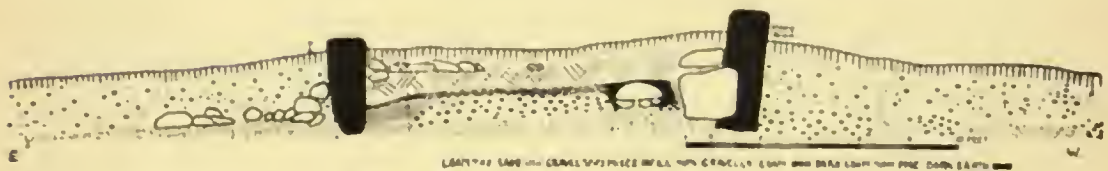


Fig. 4. Section on line shown in fig. 3.

character of the rim-sherds,¹ points to that dating with a native late Bronze Age tradition.²

The circle presents certain characteristics. The small diameter; close setting of a single ring of stones, with broad faces on the arc; the fact that the whole area within the stones was stripped to sand level; the absence of a ditch, the traces of fire, and the eccentric position of the cist seem worth noting.

These structural records may correlate with other investigations more fruitful in dating material and so fit this type of monument into place in the prehistory of our country.

We should like to thank the owner, Mr Maitland Makgill Crichton for his co-operation, and for putting at our disposal the services of two of the estate workers. We were fortunate in having the help of Miss Stirling and Miss Dimsdale. We have to acknowledge reports from Professor Waterston, Mr M. Y. Orr, Dr Simpson, and Dr Desch. Our gratitude is also due to Mr MacLaren, whose plan of the stones made before our arrival was of the utmost aid.

REPORT ON RIM FRAGMENTS. By MARGARET CRICHTON MITCHELL,
M.A. Ph.D., F.S.A.Scot.

The prehistoric pottery from the stone circle at Monzie, Perthshire, consists of two rim fragments from the same vessel (fig. 5).

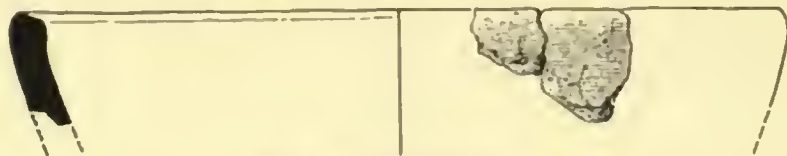


Fig. 5. Rim sherds from circle.

The ware is well fired, coarse, and black throughout with a fair admixture of grit. There is no slip and no signs of burnishing. The rounded rim has been slightly pulled, giving an inner ridge below which the internal profile tends to be slightly concave. The exterior wall shows a practically straight line.

The fragments have affinities with the pottery recovered by Professor Gordon Childe from the Recumbent Stone Circle at Old Keig, Aberdeenshire.

The analogies lie within the Old Keig class II variety which was found with cremated human bones and was apparently contemporary with the erection of the monument.

For comparative study, reference should be made to fig. 5, p. 46, in *Proc.*

¹ *Proc. Soc. Ant. Scot.*, vol. lxxvii, p. 48.

² Childe, *Prehistory of Scotland*, p. 176; *Annual Report, Institute of Archaeology*, London, vol. II, p. 36.

Soc. Ant. Scot., vol. lxvii. (1932-33), and to p. 48 in the same volume where a Hallstatt date is ascribed to this pottery after a very thorough investigation.

REPORT ON BONES. By Professor D. WATERSTON, University of St Andrews.

The specimens sent to me consisted of a large number of fragments of bone, measuring 2.5 to 4 cm. in length, or smaller.

Most of the fragments were too small to be identified, but a few could be recognised, and are described separately.

Evidence of exposure to great heat was found in the presence of fine linear fissures on the surface of many of the fragments. A few had been incompletely calcined and were black. Some fragments of calcined wood were found among the bones.

The fragments of special interest were the following:—

- (1) The terminal phalanx of the left thumb, of an adult.
- (2) Portions of skulls, one a portion including a part of the lambdoidal suture. The suture was open externally but closed on the inner surface. The age cannot be more definitely stated than that the skull from which it came was that of an adult. Portions of the petrous temporal bones, including the acoustic meatus, one that of the left side from an adult, the other from the skull of a young person, whose age cannot be definitely stated.
- (3) Portion of the body of the mandible from a child. The fragment showed the presence of an alveolus for the first permanent molar (the six-year-old molar) which had erupted, and alveoli for two milk molars and a canine. The age was therefore about six to eight years.
- (4) Portions of teeth, in the examination of which I have had the benefit of the experience of my colleague Professor Gordon Campbell, who kindly examined them; they are an upper milk molar, probably the first, and several probably "deciduous" incisors. These may all well have come from the mandible described and its corresponding maxilla. There was also an adult low premolar, probably lower, the apex of which root was almost completely calcified. This could not have come from the same mandible as the others.

A fragment of bone from outside the circle could not be identified.

It was of a whitish colour, the surface had a "soapy" feeling, and it apparently had not been calcined.

REPORT ON SLAG. By Dr C. H. DESCH, The National Physical Laboratory.

The two slags sent from the site at Monzie are typical bloomery slags, consisting essentially of ferrons silicate. A represents the more fluid portion, and B the more solid or earthy part.

It is impossible to suggest the age of the slags, even if an analysis were made, as the bloomery process underwent no significant change, except in scale, from the Iron Age to mediæval times.

MONDAY, 13th February 1939.

PROFESSOR THOMAS H. BRYCE, LL.D., Vice-President,
in the Chair.

On the recommendation of the Council, Professor Andreas Alföldi was elected an Honorary Fellow.

A Ballot having been taken, the following were elected Fellows: J. Kevan MacDowall; Murdoch McIntosh, Sheriff Clerk of Inverness; Horace Victor Pitt-Kethley.

There was exhibited by the Zetland County Council a Viking Axe, which was found in a stone-lined grave in the Churchyard, South White-ness, parish of Tingwall, Shetland.

Donations to the Museum and Library, as per lists at end of volume, were intimated and thanks voted to the Donors.

Purchases for the Library, as per lists at end of volume, were announced.

The following Communications were read:—

I.

A VIKING SETTLEMENT AT FRESWICK, CAITHNESS. REPORT
ON EXCAVATIONS CARRIED OUT IN 1937 AND 1938. BY A. O.
CURLE, C.V.O., LL.D., F.S.A.Scot., F.S.A.

Anyone interested in the science of place-names who studies the map of Caithness from that point of view will observe that the names are divisible into two groups, on a philological as well as on a geographical basis. If the county is divided into two sections by a line drawn from Cross Kirk Bay, some 6 miles to the west of Thurso on the north, to the town of Lybster on the south-east coast, thus separating the hill country from the lowland, it will be found on examination that whereas the place-names in the former are with few exceptions Celtic and Gaelic, those in the latter have their roots in Scandinavian speech.

Such a distribution points to a very considerable displacement of the native population during the period of the Norse settlement: for it can hardly be supposed that the Celtic people willingly relinquished the coasts and fertile tracts of land for the barren moors and mountains that form the western portion of the county.

Notwithstanding this abundant evidence of Norse occupation, no trace of any building referable to that period was observed when the survey of the Antiquities of Caithness was made for the Royal Commission on Ancient Monuments in 1911.

The earliest Viking settlements would probably be situated by the estuaries of the Wick and Thurso Rivers, on the sites of the present towns, where long since all traces of their existence must have been removed, or buried beneath the streets and houses. Attractive landing-places elsewhere on the coast, which is for the most part rocky and precipitous, are few and far between, but the bay of Freswick, some 6 miles south of Duncansby Head, with its shelving beach, is a marked exception to the rule.

From as early as the time of Earl Sigurd, towards the close of the eleventh century, the name of Freswick, in the form of *Thraswick*, flits across the pages of the Sagas. In the *Saga of Burnt Njal*¹ we read how Sigurd, having learnt that his brother-in-law "Havard in *Thraswick*" had been slain by the Scots Earls, Humdi and Melsnati, gathered together a mighty host from all the isles and fought a battle at Duncansness, in which the earls were defeated. Then at a later date when Kari Solmundson, who had escaped from Njal's burning hall, struck off the

¹ *The Story of Burnt Njal*, translated from the *Icelandic Saga of Burnt Njal* by Sir George Dasent, chap. lxxxiv.

head of Gunnar Lambi's son at Earl Sigurd's board, he and his fellows fared in his ship to Freswick, where he took up his abode in the house of a "worthy man, whose name was Skeggi," and with whom they stayed "a very long time."¹ Eventually, after Kari had made a pilgrimage, and obtained absolution, he returned to Freswick to the house of "Master" Skeggi, who gave him "a ship of burden," and with eighteen men on board he sailed back to Iceland.

At a still later date, in the *Orkneyinga Saga*, we find Freswick again coming into notice in connection with Sweyn Asleif's son, whose father Olaf had an estate at "Dungalsbae" (Duncansby), where the former frequently resided. Sweyn, who was a very notable Viking, looked after the estate of Freswick for his stepsons, and had himself a fortress in the neighbourhood, called Lambaborg, for which identification has been suggested both for Bucholie to the south of the bay and the Broch of Ness to the north. Incidentally, from this *Saga* we also learn that there were thickets in which men hid themselves at that date (1153) not far from the "hall of Freswick," and that at no great distance from the hall there was a farmstead.

In the centre of the wide bay the sandy beach is backed with irregular banks of sand, which rise sharply to a height of 20 or 30 feet before attaining the general land level, and as yearly these banks are eroded and driven further back by the tempestuous winds which prevail on that coast, their contours now probably differ considerably from those presented at the time of the Viking settlement.

Back from the beach, where a few generations ago there was meadowland, there is now, owing to the combined action of burrowing rabbits and tearing winds, an area several acres in extent, reduced to an arid desert of deep hollows of sand and occasional resistant ridges.

From this area sherds of coarse, unglazed pottery, which was not analogous to any recognised ware found elsewhere in Scotland, had from time to time been sent to the Museum. The finding of pottery of similar character at Jarlshof in Shetland, associated with a Viking settlement, furnished the means of its identification, and a visit to the sandy area led to the discovery of the top of a wall emerging from the sand in one of the hollows on the southern limit. The characteristic feature of this pottery, it may be explained here, is the numerous impressions on the surface, of the husks and straw of oats, which have been employed to mix with, or temper, the clay, in order to bring it to a proper consistency for potting.

Over most of the sandy area there were exposed evidences of occupation in the shape of traces of building, midden refuse, hearths, and burnt broken stones such as were used in Norse cooking and for producing steam for baths.

¹ *Ibid.*, chap. clix.

The exploration was commenced in June 1937, and the work carried on for a further period of six weeks during the summer of 1938. The outcropping wall above referred to made a suitable starting-point. It lay approximately east and west along the edge of the hollow, and was formed with large boulders from the bench. Eventually it proved to be the north face of a typical Viking wall, measuring a metre in width with a core of compacted earth in the centre.

The remains of buildings which were revealed following this discovery have been grouped under three heads, A, B, and C, according to their apparent age, commencing with the latest.

GROUP A.

The building of which the wall mentioned above formed the south front (No. 1 on plans, figs. 1 and 2), was oblong, and measured interiorly 30 by 14 feet. It had been subjected to some reconstruction, for the walls at the east and west ends were of different character. Where best preserved, the building had an elevation of from 2 to 3 feet.

The area contained within the walls was covered deep in kitchen-midden refuse, and there was no definite floor recognisable over the greater part of it.

The doorway, 3 feet in width, was placed in the north wall at a point 11 feet distant from the west end, and no kerb or sill remained between its jambs. At about 1 foot 6 inches inwards from the doorway, two large upright slabs set on edge and protruding above the floor-level to a height of a few inches extended for a length of 6 feet 6 inches—evidently the base of some arrangement employed to screen the fire behind them from a rush of wind. In the centre axis of the house, towards the west end, and covered partially by the projecting flagstones, lay the hearth, measuring some 11 feet in length by 3 feet 9 inches in breadth. There were no remains of a surrounding kerb nor of paving beneath.

At the east end a small rectangular construction with built sides occupied the centre of the wall. It measured 2 feet in height, and its upper surface was so level as to suggest that the levelling had been purposely effected. As may be seen from the plan (fig. 2), the structure had not been laid on a square foundation, the north side being 3 feet shorter than the south, so that the spaces on either side were not symmetrical.

On the floor of the dwelling, between the hearth and the front wall of this interior structure, heavy flagstones had been laid in two distinct rows from an area of scattered paving at the west end (Pl. XXXVIII, 1). As will be subsequently explained, the northmost row covered a drain, but no purpose was discernible for the other, which, however, led in the direction of the intake of the vent to be afterwards mentioned. On examination it

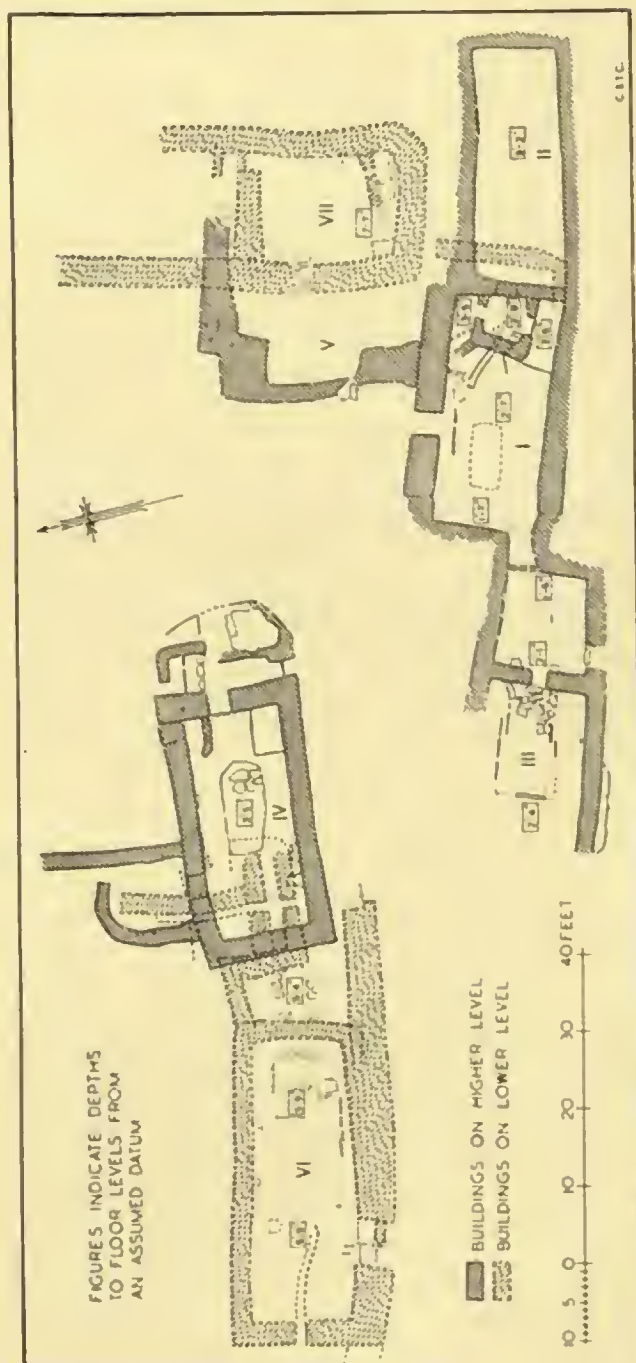


Fig. 1. General Plan showing remains of Buildings discovered. 1-V, Group A; VI, Group B; VII, Group C.

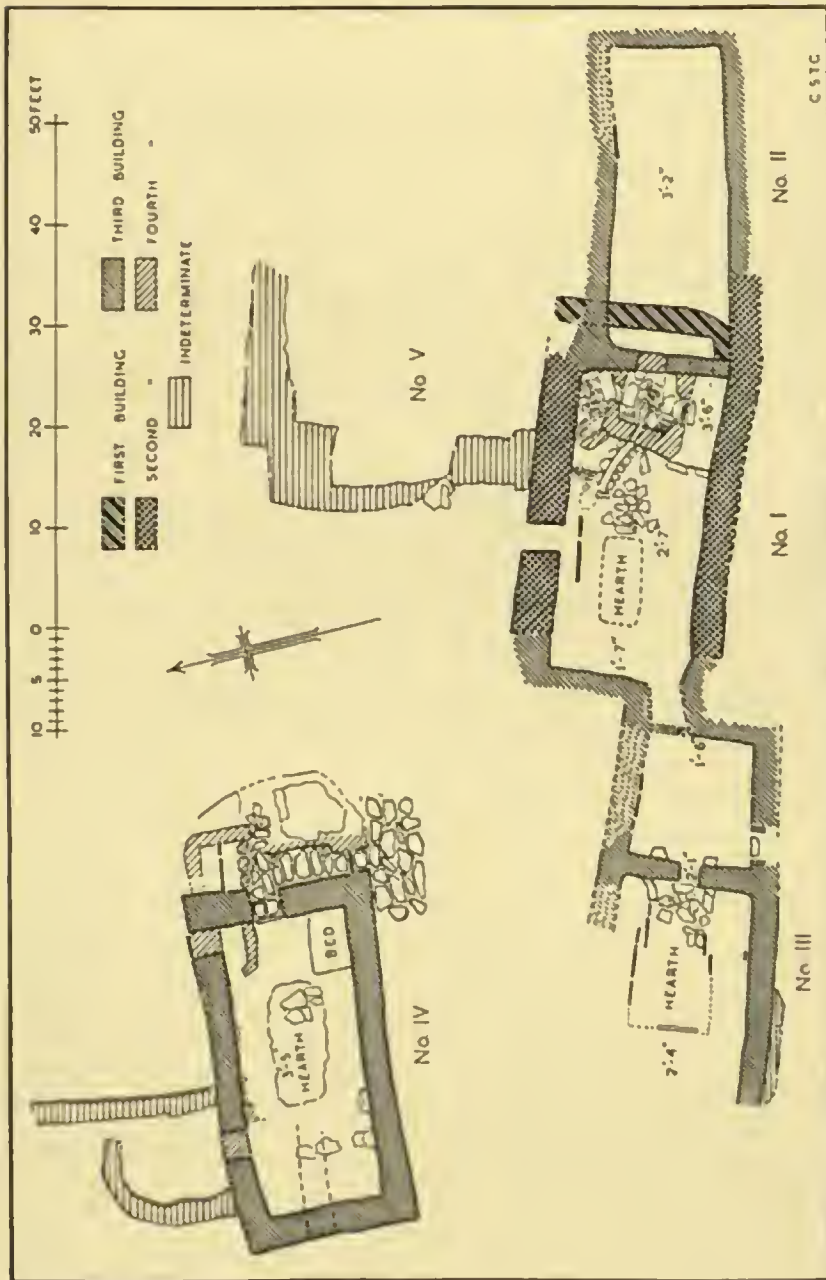


Fig. 2. Plan of Buildings in Group A.

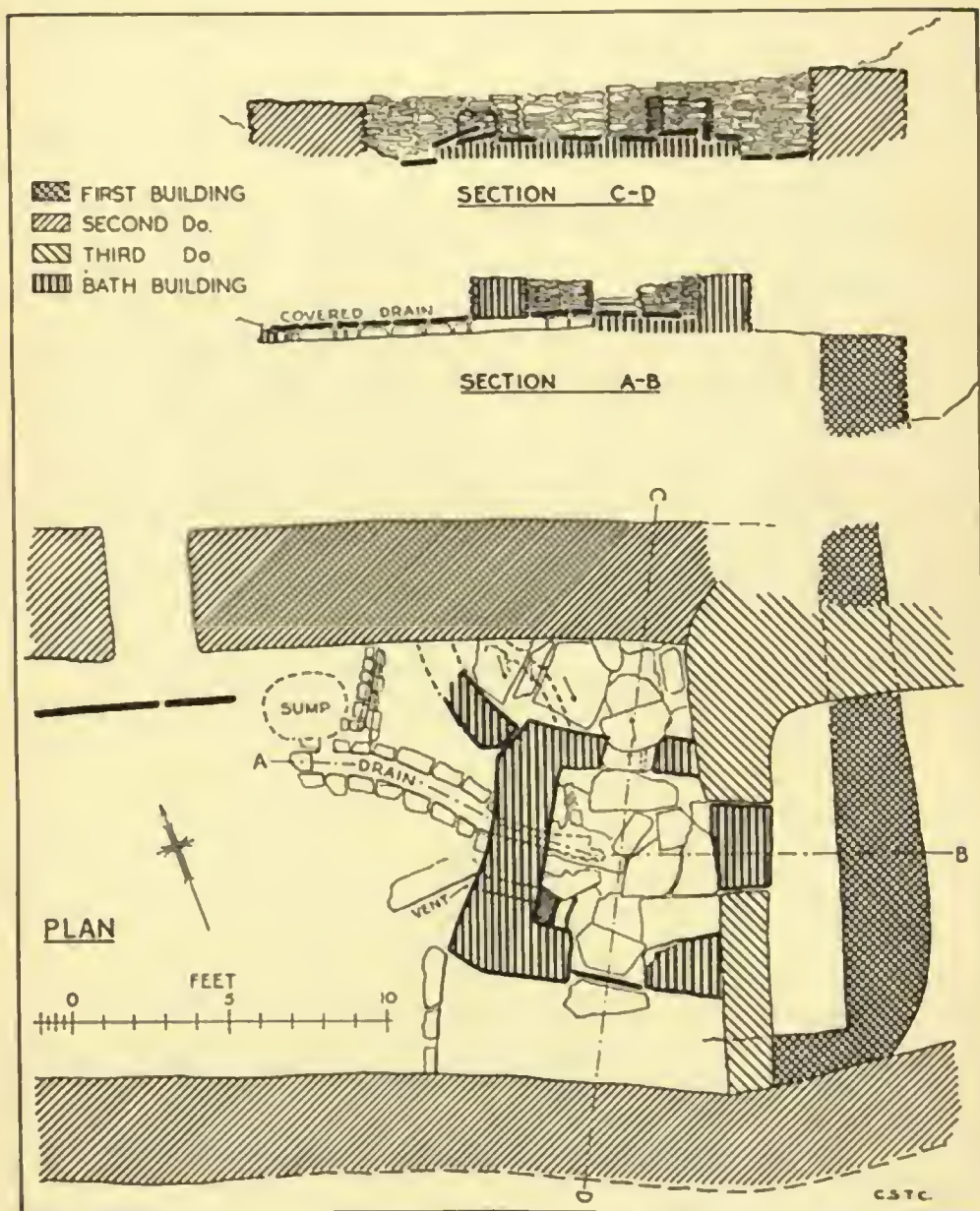


Fig. 3. West end of 1, showing Bath Chamber, Drain, and Vent, with sections, also Wall of earlier Building beyond.

became apparent that the construction at the west end was in reality a chamber of which the walls had been reduced all round to an even level, and the interior carefully filled up with stones and turf, so as to ensure a level surface.

When the filling material had all been removed, a chamber was exposed measuring 4 feet 10 inches along the back and front walls, 4 feet 5 inches along the north, and 5 feet 10 inches on the south (fig. 3 and Pl. XXXVIII, 2). The entrance was from the latter direction by way of the space left between the main wall of the house and the south wall of the chamber, which was crossed by a line of stones forming a kerb at its commencement. The entrance, approached by a step and over a projecting sill, was placed somewhat to the west of the centre of the wall, and measured some 2 feet 4 inches in width. Directly opposite, through the north wall, was another opening, 1 foot 8 inches wide, not furnished with a kerb, and in lieu of a step, with two thin slabs of stone sloping downwards into an enclosed space, or closet, between the north wall of the chamber and the outer wall of the main building, the detailed description of which will be furnished later.

The walls of the chamber on the inside remained to a height of about 14 inches. The floor was carefully paved all over, except for a small area measuring about 12 inches by 6 in the south-west corner, where there had been a fireplace. A heap of levigated clay, amounting to about a barrow-load, was piled up in the north-west corner. Beneath the surface the fireplace was filled for a depth of 16 inches with burnt broken stones, and, as none of these fragments corresponded, it was evident that they had been broken before being employed, as afterwards explained, in the fire. Among the stones a small quantity of peat-ash was observed. When the clay had been removed, a stone, such as could be comfortably held in the hand, was noticed projecting from the paving. On being lifted, it was found to have been used as a plug, filling a neatly formed hole, 3 inches in diameter, and surrounded by large pebbles. Further, on removing one of the paving stones near the centre of the floor a well-fashioned drain was exposed, which found its exit through an opening 5 inches wide in the west wall of the chamber, thence continued beneath the covers, previously mentioned on the floor of the house, to discharge by way of an offshoot into a snmp, dug in the floor towards the north wall.

On examining the fireplace after removal of the stones with which it had been filled, a vent was discovered passing through the adjacent west wall. On the inner face of the wall the sinking of a lintel had blocked this opening. On the outer face, however, the intake was still clear, flanked on either side by stones sunk in the floor, one level with the vent, and the other rising above it, as if to direct the air into it.

There was no doubt, from the facts above related, that this was a well-preserved example of a Viking bath, but before dealing further with it, a

description must be furnished of the small closet which opened out of it on the north side.

The angle formed by the junction of the north and west walls of the chamber had been constructed on a bevel, and from the base of it there ran the foundations of a lightly constructed wall, which had the appearance of being secondary, and which crossed the floor obliquely to the north wall of the house. The space, or closet, behind it measured in greatest length and breadth 7 feet by 3. At the west end, lying tilted against the north wall, were two large flagstones, with a smaller one between (Pl. XXXIX, 1), which, however, were not of sufficient length to have reached the opposite wall and to have formed a shelf, as might have been suggested by the angle at which they lay. The floor beneath them was covered with a deposit of midden refuse similar to that which was spread generally over the floor of the house. Below this there was found the remains of what appeared to be a small, open gutter, formed with thin stones set on edge obliquely on either side, which, passing beneath the westmost flag, led under the bath-chamber. The back of the closet at the east end was paved.

From early times, down in fact to the present day, for the practice still exists in remote districts of Scandinavia and Finland, the method of bathing indulged in by the peasantry, was that of the steam, or vapour, bath. So much in common had it with the bathing practices of Slavonic, Turkish, and Persian countries, that it is a reasonable supposition that the baths of these various regions had all a common origin, and that doubtless the northern peoples imported the fashion with them when they came to their present territories from the Near East during the migration period in the third and fourth centuries of our era. Nor do they, in the course of centuries, seem to have introduced any radical alterations into the system.

Various travellers who have indulged in such baths, or merely witnessed the process of bathing, have furnished accounts of it, and among the former, Paul Du Chaillu has described the bath-chamber as he found it, and his experience as a bather, in a passage which is worth quoting in part.¹ "One of the most characteristic institutions of the country (Finland) is the *Sauna* (bath-house). . . . It is a small log house, built very tight, with no windows, having a single aperture above to let the smoke out; in the centre is an oven-like structure built of loose stones, under which a fire is kept burning till they are very hot: then the fire is extinguished, and the women clean the place thoroughly of ashes and soot, the smoke hole having been in the meantime closed. A large vessel filled with water is placed within; and a number of slender twigs, generally of birch trees, are put into it, to be used as switches." After describing the assembling of the bathers, male and female, who, with a thermometer

¹ *The Land of the Midnight Sun*, vol. II, p. 201.

standing below zero, appeared in costumes that reminded him of Africa minus the colour, and his own embarrassment on finding himself among them in the same condition, he goes on to describe the process of bathing. "I hastily pushed the door open and was welcomed by the voices of all the company as I closed it behind me. The heat was so intense that I could hardly breathe, and I begged them not to raise any more steam for a while. . . . At first I seated myself on one of the lower benches built around, after a while getting on the other above. More water was poured on the hot stones, and such a volume of steam arose that I could not endure it, so I jumped down again and reclined in a half-sitting posture in order to breathe more freely. In a short time I was in a most profuse perspiration; again and again steam was raised by pouring water on the stones, till at last the hot air and steam became extremely oppressive. Now and then we poured water on each other . . . then with boughs everyone's back and loins were switched till they smarted severely. . . . In about half an hour the people began to depart, at first submitting to a final flagellation, after which cold water was poured upon the body: then all went home as naked as they came. . . . I rolled myself in the snow as did some others."

The details of the Freswick bath-chamber point to a procedure having been followed there very similar to that related by Du Chaillu. Burnt broken stones would be built up into a heap mingled with peat in the corner above the vent, and the fire lighted from beneath. When the heat of the stones had been raised to a glow heat, and the bath-chamber prepared as described, the bather, or bathers, for the space was too restricted to hold many, would take their places on a bench along the back wall, and water would be thrown on the stones to produce the necessary steam. The stones were of such a size as would have retained their heat for a considerable time, so the process of throwing water on to them would be repeated for as long as was necessary, or as their heat remained sufficient. The flagellation with twigs, no doubt, would follow, as that, from all accounts, appears to have been a regular part of the procedure, and finally a douche of cold water would be administered. It is possible that this last act of ablution took place in the closet on the north side, in front of the inclined flags, which would direct the water to the drain, passing out from beneath them. This last suggestion is put forward tentatively, for the drain was not placed in the position most convenient for such a purpose, nor would the direction of the water into the base of the bath-chamber building be a sound arrangement when it might with little trouble have been led direct to the main drain outside. In a bath-house excavated by Dr Aage Roussell, at Sandness in Greenland,¹ a small lateral chamber was likewise found, but in that case it

¹ *Sandness and the Neighbouring Farms: Researches into Norse Culture in Greenland*, p. 70.

actually contained the stove. In the Freswick closet there were no indications of a fire ever having been laid, and, as has been shown, the steam was generated within the bath-chamber itself.

It is highly improbable that the heap of clay deposited in the north-west corner of the chamber had any connection with the bathing arrangements. As it had been levigated, it is likely that it was intended to be used in the manufacture of pottery.

The secondary character of the bath building was evident from the filling up of a doorway in the back wall, which had originally given access to the building adjoining on the east.

One other feature of interest was discovered in the main building. From the face of the north wall, at a point 5 feet 6 inches to the east of the entrance, there ran a gutter formed with stones set on edge in a shallow trench, and converging at base, which discharged itself into the sump, and had evidently served as a latrine.

Very few relics were recovered from the house or the bath. Such as there were consisted of two perforated femur-heads, which had been used as whorls: a discoid perforated object of bone which may have been similarly used; an oblong object of bone, polished and rounded at one extremity; a turnbuckle or snib of bone for a door (Pl. XLIX, 2); several fragments of mediæval pottery, glazed and unglazed, as well as various sherds of Viking cooking pots.

Lying in alignment with No. 1, immediately to the east and separated by the mutual wall which forms the back of the bath-chamber, was another building (No. II on plan), measuring 30 feet in length by 11 to 12 feet in breadth, the walls of which on both sides, and at the east end, were much dilapidated.

The mutual wall at the west end had originally, as already stated, been pierced by a doorway somewhat to the north of the centre, and at its south end there was a recess measuring 20 inches across, 9 inches in height from the original floor-level, and 19 inches deep, the back of which was formed with a large upright slab set in the west face of the wall. The wall in the immediate vicinity of this recess, which appears to have been reconstructed, is built with thin flat stones, after the nature of an interior wall. The floor of this house was covered deep in midden refuse, and no feature of interest came to light in the course of its clearance. There were indications of fires having been lit on it here and there, but there were no signs of a definite central hearth, and it is doubtful if the building had been used as a dwelling.

At 2 feet 6 inches eastward of the mutual wall, and beneath the floor-level, there was exposed the top of the wall of an earlier building, lying almost parallel with the former, and returning westward at its south end (see plan, fig. 3). It was of superior masonry to the wall of the buildings on the

surface, and stood erect for a height of 2 feet 6 inches. Unfortunately, the exploration of the house of which it formed a part would have entailed the destruction of the bath, and this was not considered justifiable.

No. II only yielded a fragment of the upper stone of a rotary quern of garnetiferous schist, a large ovoid pebble clipped in the centre of each side, and an anvil stone.

Making contact with the house No. I at its south-west corner, as shown on the plan, was a range of building in a very dilapidated condition (No. III); which had also suffered much at the hands of the spoiler. It consisted of two rooms connected by a doorway in the centre of a mutual wall, and had evidently formed a smithy, with probably a workshop (Pl. XXXIX, 2). The eastmost chamber, the walls of which had been very poorly constructed, measured some 12 feet 6 inches in length, by 10 feet at its east end and 11 feet 3 inches at the west. At one time a doorway had been broken through the west wall of No. I, but subsequently closed, and a door, probably later, opened at the west end of the south wall.

The floor was covered with five layers of flat stones rising to a convex profile, with the highest point in the centre. The lowest layer consisted of flat, heavy beach-stones, lying on sand; while above them were layers of Caithness stone, neatly fitted to one another, with occasional pockets of midden refuse between. The depth of this paving was 9 inches. Below the upper layer there were remains of a hearth evidently secondary. The purpose which this flooring was intended to serve was not obvious, but it would have provided a thoroughly stable foundation for an anvil, or bench set upon it.

In the south-west corner, adjacent to the doorway and 1 foot 7 inches from both walls, there was a pit 2 feet 2 inches in diameter and 1 foot deep filled with soil, having countersunk in the centre of it a post-hole surrounded with packing stones, 1 foot 10 inches deep from the surface and 9 inches in diameter. No corresponding post-hole was found on the opposite side of the doorway, nor in the opposite corner of the chamber, where there was a bed of clay.

The only relics found in this chamber were three perforated femur-heads, which had been used as whorls, all of which came from the north-east corner.

The partition wall had been constructed with thin flat stones, and still remained to a height of 1 foot 3 inches. Placed against it at some 2 feet north of the doorway was a block of stone, some 8 inches square in section, rising a few inches above floor-level, and firmly set in the sand. Stones, either built into the wall or placed as this one, are usually associated with the position of a seat. The section of the wall to the south of the doorway was founded more deeply than that opposite, and as the latter rested on a midden it had evidently subsided to some extent, as may be seen in the illustration (Pl. XXXIX, 2). The doorway was 2 feet wide, and opened on

to a paved area at the east end of the second chamber. Of this chamber (Pl. XL, 1) the whole of the west wall, and almost the entire length of the south wall, had been removed, and accordingly the exact dimensions were not procurable. But where the walling had survived at the east end, it had measured 13 feet in width, and, judging from the size of the hearth and the extent of the south wall, it had probably measured about 21 feet in length. The south wall still showed four to five courses of stone rising to a height of 1 foot 9 inches, and towards its west end, as shown on plan (fig. 2), it had been buttressed, with a row of heavy boulders lying against its outer face.

Occupying the interior of the chamber was a large hearth, measuring some 10 feet in length, by 8 feet in breadth at its western end, and 6 feet at the east where there were intakes on both sides, covered with a bed of compacted peat-ash to a depth of 13 inches. It had been enclosed on three sides with a kerb of long, narrow stones set on edge, a number of which still remained *in situ*. The hearth had been distant 4 feet from the east and south walls, and only 2 feet 6 inches from that on the north. The paving in front of the doorway in the division wall extended up to the edge of the hearth, and no kerb intervened at this end. At the east end, and on the south side, the end kerb stone, 2 feet 6 inches in length, was placed 9 inches inwards from the general alignment, and in rear of this was a paved recess in the hearth, which was free from peat-ash, and measured some 2 feet square in extent. Opposite this, firmly set at the base of the south wall, was a flat-topped stone about 1 foot in breadth and projecting a few inches above floor-level, which may have been connected with the anvil. On the north side of the hearth, and at the east end, a flue had been formed, rather over 1 foot in width, with two flat stones set on edge parallel to the kerb. When discovered, this had been used as a fireplace, and was filled with kitchen-midden refuse. At its inner end it had been blocked with a number of thin flat stones standing on edge, which, when the true nature of the construction was realised, were found to be the original covers of the flue, and were replaced (Pl. XL, 2). The flue terminated in a slope of hard compacted peat-ash. While no food refuse lay upon the hearth, such material covered the area at the east end of the chamber.

Irrespective of the space occupied by the fire, the character of the relics found in this part of the building left no doubt that it had been the smithy of the settlement. Heavy lumps of slag, the residue of bog iron ore from which the iron had been inefficiently extracted, were numerous, but there was no trace of a bloomery, nor did any of the slag lie among the peat-ash. We found six hones, all but one of the type which have been designated "hunched," from the hunch-like expansions at one end; three objects of iron; and a flat ovoid pebble, faceted on both sides as if by polishing. In addition to these were several objects

not necessarily to be found in such associations, viz. a hammer-headed pin of bronze (Pl. L, 7) found with a small-toothed, single-sided comb (Pl. XLVII, 2); and a finger ring of thin, flat bronze plate, penannular, and tapered to the extremities (Pl. L, 10). As these three last-mentioned relics all came from the extreme west end, two of them may have been from the site of the wall which could not be identified, while the last-mentioned was from the upeast; they may all thus have belonged to an earlier period. There were also found a bone pin, a sandstone pebble, longitudinally grooved and plano-convex in cross-section, which had probably been used as a plummet. Near it was found a quartz object, which seemed to have served the same purpose. From the vent there came a whorl fashioned from a perforated femur-head.

To the northward of the last building, and lying directly east and west, at a distance of some 23 feet from its eastern end, are the remains of a dwelling (No. IV on plan), the walls of which have been reduced practically to foundation level (Pl. XLI, 1). Though this building is not in parallel alignment with those previously described, the relative levels indicate that it probably was in contemporary occupation in its final stage. Two doorways in the north wall were blocked, which suggests that the house at one time had formed part of another construction, or of a range of buildings extending to the north.

It measured interiorly 29 feet in length by 12 feet 6 inches in width, with a slight reduction in the latter dimension towards the western end. The walls, which appeared all to belong to one period, measured 2 feet 6 inches in breadth, except the east wall, which measured 3 feet 3 inches. The entrance, 3 feet wide, was through the east wall, a little to the north of the centre of the gable, while in the north wall were two filled-up doorways. As was not unusual in houses of the Viking period, there had been an outbuilding in front of the door, now merely represented by foundations—no doubt to afford protection from the violent winds that frequently blow in from the sea on the north-east coast. Between this and the gable a passage had been formed, leading to the main door, which was entered through a doorway, 2 feet wide, just outside the south-east angle of the dwelling. In front of this was an area of paving 12 feet by 6 feet in extent. At a point 1 foot 9 inches in from the doorway the passage was crossed by a massive kerb, which projected to a height of 10 inches (Pl. XLI, 2). At a distance of 3 feet 6 inches from the outer doorway the passage expanded from 2 to 3 feet, and continued at that width to the entrance to the house. Owing to the erection of the gable at its north end on a kitchen-midden, there had been a considerable subsidence at that point, which had resulted in a steep slope in the passage. On this had been laid several layers of paving slabs to reduce the gradient.

To the north of the doorway of the house, and covering the northmost

portion of the gable, was a box-like enclosure (Pl. XLII, 1), measuring 5 feet by 4 feet, and divided lengthwise into two equal compartments by two large upright slabs, now incomplete, but which must originally have risen to a height of 2 feet above the floor of the box. This enclosure had been formed with a surrounding wall through which there appears to have been a gap, some 18 inches wide, on to one or both divisions, at the gable side. The inner or south compartment alone was paved. There was nothing to indicate the purpose served by these twin compartments, but they may have been used to contain young animals, or stores. At the inner end of the entrance there was a kerb, a thin slab set on edge and rising to a height of some 6 inches above the floor-level.

Within the house, lying in the central axis, and somewhat to the east of the centre, was the site of the "long fire," measuring 12 feet by 6 feet, which had been laid on the deep deposit of food refuse that formed the floor. If it had been originally protected by a kerb, all the stones had been removed. From the face of the north wall, and alongside the hearth, several stones projected, which may have formed brackets for the support of a bench. Occupying the south-east corner, to the left of the doorway on entering, was an oblong area, measuring 5 feet 6 inches by 4 feet, slightly raised, and outlined on the outer side by a setting of flat stones (Pl. XLII, 2). This was evidently the site of the bed, and was analogous in position to the platforms met with in the chambers of the Viking building at Jarlshof, Shetland.¹

Such bed-platforms indicate that the simple fashion of sleeping on bedding spread out on a platform in place of upon a constructed wooden bedstead still prevailed. The old Norse word *seug* originally meant such bedding rather than the bed itself.²

On the opposite side of the doorway a thin wall extended inwards for a length of 4 feet 6 inches, leaving between it and the north wall a space 2 feet 3 inches wide. There appeared to have been an enclosure of some sort in the south-west corner, measuring some 6 feet 6 inches by 5 feet, but the remains were very indefinite, and there were also indications of a partition wall having been erected on the top of the wall of an earlier occupation beneath, which had collapsed when the house fell into ruin. Two short lengths of wall, 1 foot 6 inches apart, projected from the south wall towards its west end, suggesting the remains of a cupboard, and an object of cetacean bone, $5\frac{3}{8}$ inches in length, found in the immediate vicinity, had evidently been half of a turn buckle or snib with which to keep a door closed.

The other relics recovered from this house were neither numerous nor important. There were three whorls, two of bone made from femur-heads, and one of stone with some simple, nondescript ornamentation around the

¹ *Proceedings*, vol. lxx, p. 261.

² Aaga Roussell, *op. cit.*, p. 70.

perforation on one face: a tapered penannular ring of very thin bronze, of which one-third was amissing; part of a haunched hone; a piece of thin sheet bronze with two rivets in it, probably part of a cauldron; two oblong pebbles both fractured at one end; an iron rivet with a lozenge-shaped head; an iron knife, and a hook of the same metal; a stone with a narrow longitudinal groove on one face, possibly a sharpening stone; and a piece of the upper stone of a rotary quern, formed of garnetiferous schist, and found in the wall when opening out the eastmost of the two closed doorways on the north, also a piercer of bone. A third whorl made from a femur-head was discovered in the northmost division of the enclosure outside the door. A certain amount of iron slag was also found in this house. On the level of the existing wall-head at the west end there was found a piece of a mediæval cooking pot, referable in date to the second half of the thirteenth century.

Based on the north wall of the house at its western end was a small enclosure in the form of a quadrant of a circle, measuring some 10 feet along the north base by 9 feet on the east. The entrance, 2 feet wide, was from the north interrupting the contact of the two sides, and beyond it the east wall extended for a distance of 8 feet. On the surface of this enclosure, at the level of the remaining wall-head of No. IV, a paving extended over one-half of the area, evidently of later date. Beneath this the soil was black and closely compacted, with little or no food refuse intermingled. Towards the west, the east wall was constructed without facing stones, and had probably been backed with turf on that side. The features of this enclosure, and the condition of the floor, suggested that it had been a small fold such as was used to hold the ewes when they were driven in to be milked. In which case the extension of the east wall at the entrance was made to facilitate the herding of the sheep. No relics were found within it.

At the east end of the sand hollow, facing directly on to the top of the sandy bank that rose up from the beach, were the foundations of a large enclosure (plan 2, No. V), which can only have been the "nanst" or boat-shed into which the boats were drawn in autumn by means of rollers and ropes over a slipway up from the shore, to be sheltered from the storms during the winter, and tarred and reconditioned for the following year's voyages. The "nanst," as will be seen from the plan, had been an irregular U-shaped construction open towards the sea, with the north walls of houses Nos. I and II forming the south leg of the letter, and the other lying 26 feet to the north. Forming the centre part of the back wall was a straight length of foundation, 12 feet in length and 2 feet 6 inches in breadth. Elsewhere the foundations were irregular and massive, formed with large heavy boulders. While the seaward portion of the north limb of the U, owing to the more or less level character of its surface and the heavy boulders with which its outline was formed, suggested a slip on which a boat might have been constructed, there was no positive evidence for this forthcoming. In

the north side of the open space in front was the site of a hearth on a bed of clay, burnt to a brick red, and from this was recovered an iron ship rivet, much corroded, while remains of several others were picked up in the immediate neighbourhood. At the upper edge of the bank near the centre there was a setting of large stones extending across the area for some 4 or 5 feet, with a single stone on end sunk deeply in rear of them. From the position of these stones it seemed probable that they formed the site of a windlass for drawing up the boats. On the slope in front, and towards its upper end, lay three or four large flat stones in a line, which were possibly the remains of a gangway.

At the seaward end of the "nanst," adjacent to the site of the hearth, there was found by Mr Simon Bremner, set upright in the sand with its upper edge just protruding, the cooking pot (Pl. LI, 4), and the pieces of the small cup (Pl. LI, 3), now reconstructed, were subsequently also recovered from this spot. On this area there was also found a large quartz pebble, 4 inches in length (similar to others found on the site to be discussed later on), flat on one side, with a partial perforation at one end, and probably intended for use as a plummet.

As previously mentioned, the historical evidence in the Sagas shows that a Viking settlement had existed at Freswick from a period at least as early as the eleventh century, and to judge from the standing of those whose names figure in connection with it, it was the residence of people of importance. While nothing has emerged in the course of the excavation that would afford a clue to the terminus *a quo*, we are able from certain relics to assume a fairly sure date for the terminus *ad quem*, the latest occupation of the group of buildings which have been discussed on the foregoing pages.

Associated with these buildings have been found sundry sherds of mediæval pottery which can be attributed to the second half of the thirteenth century. Among them is one sherd in particular, found on the wall-head of No. IV, which presents a close parallel to a sherd found at Rayleigh Castle, Essex, the occupation of which ceased some time before the year 1277. The other piece of evidence is a silver penny of the reign of Henry III. of England, Moneyer "Willem on Laud," Mint, London, dating from about 1258-1272,¹ which was picked up on the surface of the blown-out hollow. This is slender evidence for dating, but it is strengthened by the negative evidence, supplied by the fact that no relic, which could be assigned to a later date, was found.

If, for the end of the occupation, some date between 1250 and 1270 may be accepted, then it is possible to suggest a cause for the abandonment of Freswick by the Norsemen. In the year 1264, the year subsequent to the

¹ I am indebted to Mr Robert Kerr of the Royal Scottish Museum for the identification of this coin.

battle of Largs, Alexander III. sent an army into Caithness to exact a fine from the people because they had submitted to King Haakon of Norway in the previous year.¹ The army stayed in Caithness until the autumn and departed by sea, taking with them the treasure they had collected, much of which, however, was lost during the course of their voyage, to Dugald, King in the South Isles. It seems a fair assumption that at the hands of Alexander's expedition the Vikings were driven from Freswick, for as seafarers they were probably in a better position than most of the inhabitants of the county to render assistance to the Norwegian king.

As stated above, the buildings explored have been divided into three groups according to their periods, estimated by their relative depths from the surface. Group A, the constituents of which have been described in detail above, consisted of (1) two oblong buildings which may at one time have been dwellings, but which in their latest stage had in the one case been used to contain a bath-house, and in the other possibly allowed to become derelict, or been used as a store; (2) the smithy, and an inter-communicated chamber; (3) an isolated dwelling, not in parallel alignment, and possibly of slightly earlier construction; and (4) the "naust" or boat-shed. The group appears to have been part of a settlement on a courtyard plan, not a complex, as in the case of the Greenland farms, and such as also appears to have been the case in Shetland. We have here the bath and the smiddy, situated on the south wing and somewhat isolated, as being both potential sources of conflagration. The boat-shed has occupied the east side, and the dwelling has been erected on the north-west.

The farm buildings, consisting of the stables, byre, dairy, and other out-houses, are not represented, except, perhaps, in the case of the annex to the dwelling, and it may be presumed that they occupied the north side, and so as far as any part remains they probably lie beneath a bank of sand, which rises to a height of 6 feet and more above the level of the floor of the hollow.

The dwelling-house in its details does not conform exactly to the typical house of the Viking period, as revealed at Jarlshof, Shetland, in 1934,² or to that exposed in Group B, to be shortly described. There was no indication along either side of the platform, or dais, on which the benches were placed, and where the inmates sat and took their meals, nor was there found any oven sunk in the floor, nor any of the burnt broken stones that accompany such cooking arrangements, both features found in the houses above referred to. Nor was there any remains of a high seat, either at the side or at the end of the hearth, as in the earlier house in Group B, nor any indication of the hearth having been originally contained within a kerb. The amount of kitchen refuse covering the floor pointed to rather filthy conditions of occupancy during this last phase, and suggested that slum conditions may

¹ J. Ferguson, *Alexander III.*, p. 120.

² *Proceedings*, vol. lxix, p. 265.

have arisen at Freswick before the settlement finally closed its existence. The paucity of relics produced from the careful examination of much kitchen-midden refuse pointed to the further conclusion that the residents at "Thraswick" had not formed a wealthy community.

GROUP B.

Group B, situated at the west end of the hollow, was covered by a much greater depth of sand than were the buildings of Group A, and part of it actually lay beneath the foundations of No. IV of the latter group.

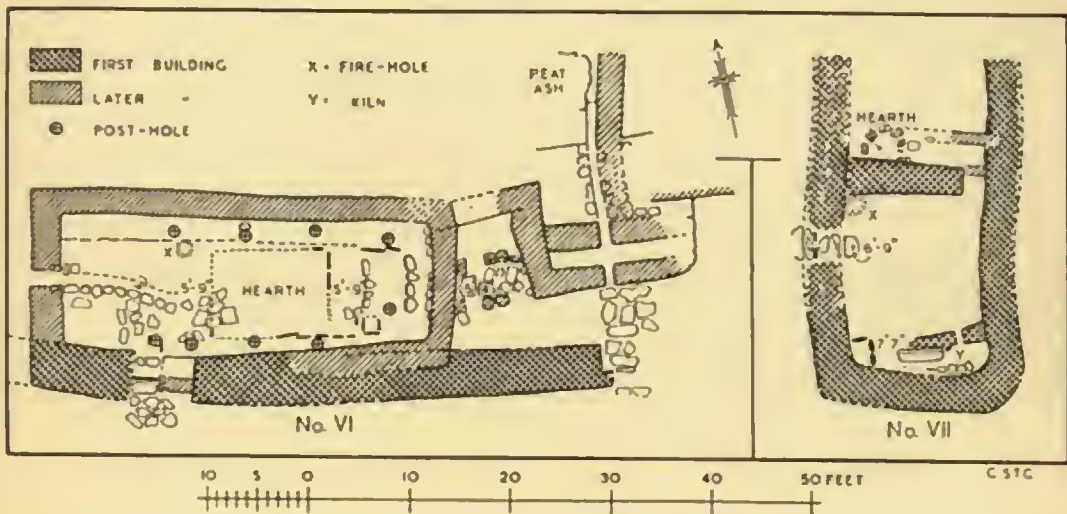


Fig. 4. Plan of Buildings in Group B (VI) and C (VII).

It consisted, as shown on the plan (fig. 4), of a dwelling-house (No. VI), a small chamber constructed against its east wall, and represented by fragmentary remains of some pieces of walling and of a flue. To a greater extent even than in the case of the previous group there was evidence of reconstruction, and of earlier buildings having existed in the immediate vicinity.

The three members of the group lay approximately east and west, with the dwelling-house at the end, a little out of alignment with the others. The house was, however, itself a secondary construction on the site, for, as will be observed by reference to the plan, it had been erected against, and with its south wall partially embedded in, the wall of an earlier structure, much more massive in character, and which had belonged to a building of greater length. This wall, which starts at the western jamb of a doorway on the east, is exposed for a distance of 56 feet, with a width of some 5 feet,

to the west end of No. VI, and as it was obvious, at the latter point, that it had been broken through and faced up, exploration was carried on into a high bank of sand in the same alignment to westward, and what appeared to be the same wall was located, by sinkings at intervals, for a farther distance of 25 feet, making a total length of 81 feet. From the details remaining of the doorway at the east end of the wall, a door check on the west side and a projecting kerb opposite the rebate, it is evident that the building, of which this wall formed a part, must have been situated to the northward. A second doorway, also primary, some 3 feet 6 inches wide, had been constructed some 13 feet 6 inches from the west end as exposed, but had been subsequently blocked, as after stated. On no part of the area cleared in the vicinity were any further remains found of this early building, nor were there any traces revealed by trenching. Any suggestion that it was part of an enclosing wall to the settlement may, I think, be ruled out by the fact that no trace of it was met with in the excavation of Group C at the eastern end of the hollow, as well as by the domestic character of the doorways themselves.

It was very apparent throughout the course of the excavation that when a fresh building was to be erected, stones from any abandoned structure were fully utilised. As the material was invariably boulders from the adjacent shore, laid in dry-stone fashion, it suffered no deterioration by use.

The dwelling-house (Pl. XLIII, 1), except as above stated on the south, was surrounded by walls of an average thickness of 3 feet, and a similar height on the south where highest, but greatly reduced elsewhere. It measured interiorly some 36 feet 6 inches in length, and 13 feet in width at the west end but 12 feet at the east where the pre-existing wall had been supplemented by an interior facing. The entrance had been by a doorway immediately to the west of the blocked doorway, 3 feet wide, crossed by a projecting sill 7 inches high, and backed to the outside by a large rounded boulder (Pl. XLIII, 2). On the inside it gave by a step to the floor-level. Before the doorway on the outside was an area of paving. The interior of the house, when the blown sand had been removed, was found to be covered, especially at the east end, with a deep deposit of kitchen-midden refuse, in which limpet-shells predominated—a barren deposit as far as relics were concerned, for it yielded practically nothing except a few small fragments of cooking pots. Immediately above floor-level was a stratum, 5 inches deep, of brown humus with a thin layer of sand in the middle of it, representing probably a period when vegetation had spread over the floor of the abandoned dwelling. In the middle of the floor, 10 feet distant from the east end and 15 feet from the west, lay the hearth, 12 feet in length by some 8 feet 6 inches in breadth, with some of the stones of an upstanding kerb still remaining

on the south and east, and one making a return to the north, at the south-west corner. Peat-ash lay upon it to a depth of 1 foot, representing two periods of occupation, distinguishable by an intercalated layer of discoloured sand. Along the north wall there was still traceable, for a breadth of some 3 feet, the site of the *pallr*, or dais. This was readily recognisable by the purity of the sand which lay almost at the surface, having been protected during the period of occupation by a flooring, or covering of some carpeting material, possibly of rushes or heather. This condition of the sand was in marked contrast to that on the floor of the dwelling, which was uniformly discoloured to a depth of several inches. Towards the west end two long flat stones, set on edge, were probably the remains of a kerb that had extended all along the edge similar to the remains found at Jarlshof.¹ On the south side, and to the east of the centre, there extended for a distance of 6 feet a line of similar stones, which though only some 20 inches distant from the existing wall-face were the same distance out from the face of the original wall as were those from the north wall, and accordingly may be regarded as having formed edge-stones of a dais which had existed along that side in the original house.

At the east end, between the kerb of the hearth and the end wall, was a low platform some 5 feet 9 inches long and slightly less in breadth, with a row of boulders along the front, and a narrower platform rising at the back of it, 2 feet 9 inches broad. On the foremost of these platforms, for the back one seems too narrow, stood the high seat reserved for the master of the house. On the south side of the high seat platform, covered by the upper stone of a rotary quern (Pl. XLVI, 1), was a post-hole, some 18 inches in depth and 9 inches in diameter. There were wedge stones at the mouth of the hole, and on one side a packing of clay, while a fragment of carbonised willow was recovered from the bottom. The old Norse name for the high seat was *ondvegi*, derived from the name of the two thick pillars between which it was placed. These pillars, in Viking pagan times, adorned with carved representations of the gods, were regarded as holy, and when the Norwegian colonists emigrated to Iceland they took their high-seat pillars with them.² The position of the above-mentioned post-hole suggests that it may have contained such a pillar, while another post-hole on the north side, 17 inches deep and 7 inches in diameter, may have held its corresponding fellow. On the other hand, it should be noted that on the north side four post-holes were discovered more or less at equal distances from one another, in which series occurred that adjacent to the site of the high seat. On the south side, although the post-holes are not similarly in alignment,

¹ *Proceedings*, vol. lxi, p. 273.

² Falk and Gordon, *Scandinavian Archaeology*, p. 324.

there is a series also equidistant, and accordingly the pillars they contained in both series may have been merely used in support of the roof.

In all, along the north side four post-holes were recovered 6 to 7 feet apart, and along the south side five. The three in the centre were more or less equidistant, at 6 to 7 feet, while the post-hole already referred to beside the site of the high seat was some 8 feet distant from its neighbour, and quite out of alignment. The fifth was only 4 feet west from the fourth. The post-holes on the south side, with the exceptions of the first and third, were placed nearer the wall than on the opposite side, while the fourth and fifth were situated one on each side of the blocked doorway, as if they had had some connection with it.

In a number of instances the holes had been purposely preserved, in one case, as already mentioned, by covering the mouth with a quern stone, and in others by the insertion of pointed boulders, thus indicating that when this house was abandoned there still was an idea in the minds of its owners that it might again be roofed and occupied. The existence of such an intention may have saved it from the demolition that overtook other buildings in its neighbourhood.

On the north side, some 12 feet distant from the west wall, and just in front of where the edge of the dais had been, was a cooking oven. It was much dilapidated, and only a few of the stones that had formed the sides remained, while the sole at the bottom had evidently been removed. However, to dispel any doubt there might have been as to the purpose of the hole, several burnt broken stones remained within it. Its dimensions had been apparently 2 feet by 1 foot 5 inches, and its depth 7 to 8 inches. As in the similar oven found at Jarlshof,¹ the slab forming the back was sloped backwards. The method of cooking was that still practised by some primitive tribes. The broken stones, heated in the fire nearby, were deposited in the bottom of the hole. They were then covered with a layer of grass, or other vegetable matter, such as leaves, on the top of which was placed the food to be cooked. Further layers of grass and heated stones were superimposed, and on the top, to keep in the heat, was placed a covering of turf.

On the south side of the house, at 5 feet distant from the east wall, and little more than 1 foot out from the face of the south wall, was another stone-lined pit, on which the slabs remained on three sides. It measured 2 feet square, and had a depth of 1 foot 4 inches. It was not floored, nor did it contain pent-ash, nor any burnt broken stones to indicate that it also had been used as a cooking oven, but a number of pieces of broken pot were found within it. In its vicinity, along the margin of the central hearth, where a kerb had been removed, there was substituted an elongated

¹ *Proceedings*, vol. lxi. p. 277.

heap of burnt broken stones, which had probably come from a cooking hole nearly (Pl. XLIV, 1).

In the south-west corner there was a suggestion, from the placing of the few flat stones remaining, that there may have been a bed-platform some 5 feet square on this spot. For a distance of 7 feet 7 inches from the west wall, on the north side only, there was a hard compacted floor of peat-ash and clay, the characteristic flooring of the Viking dwellings, and the absence of this flooring from the south-west angle gives strength to the supposition that that area had been occupied by a bed-platform.

In the centre of the west wall there was an opening, flanked on either side with one upright boulder, forming the mouth of a vent, paved, and extending to the west edge of the hearth (Pl. XLIV, 2). The side stones of the vent remained for almost its full distance on the south, but except for one or two stones at the opening they had been entirely removed from the north side. Judging from the complete portion, the breadth must have been about 1 foot and the depth some 5 to 6 inches. Some arrangement must have been provided for closing the intake, for the opening, as remaining at present, is quite unnecessarily large.

At some 20 feet distant from the west end the foundations of a secondary wall, 2 feet 6 inches wide, not bonded into either side wall, crossed the interior (Pl. XLV, 1), and at a distance of 2 feet from its junction with the north wall a narrow doorway had been made through it to the interior. It ran from a point on the south just where the reduction in the height of the wall occurred. In the interior in connection with this later wall, the length of the hearth had been somewhat reduced by a square of paving laid upon it.

In the inner face of the south wall, towards the interior, two distinct styles of masonry are apparent (Pl. XLIV, 1), that to the west, formed with roughly shaped blocks, being the earlier and the face of the original wall; that to the east, consisting mostly of boulders, being the construction of the later house and built against the former. In the original wall at 19 feet from the west end, and 1 foot 5 inches above floor-level, there was a neatly fashioned recess, measuring across the front 7 inches by 5, and extending inwards with gradually diminishing breadth to a depth of 6 inches.

The examination of the mass of kitchen-midden refuse that filled the eastern half of this house, and even extended over the wall to the north, yielded almost no relics, except some fragments of cooking pots of the usual character and a belt-chape of bronze (Pl. L, 5). The relics found on the floor-level, and immediately above it, consisted of part of a comb (Pl. XLVII, 3); three broken pieces of hones of the haunched variety; two bone whorls made from the heads of femurs; two short metacarpal bones of pig, perforated near the centre (Pl. XLVIII, 12 and 14); an

awl of bone; an iron knife-blade and two or three unimportant objects of iron; three pieces of thin bronze, two of them with rivet holes in them, parts of a cauldron; a small cubical block of quartz, grooved across each face for a cord, probably to be used as a plummet, or weight; three stone pot-lids of different sizes; and the upper stone of a rotary quern of unusual form, being approximately pear-shaped, with the perforation for the handle in the narrow end, found as stated, covering a post-hole. At the base of the early wall on the south there was found a piece of a large stentite urn, and the polished tine of a red deer antler.

The further remains of buildings in this group are fragmentary, and difficult to determine. Immediately to the east of the dwelling-house was an area enclosed on three sides only, measuring some 8 feet from north to south, and expanding from a width of 5 feet 9 inches at the back or north end to 8 feet at the front. The west wall, which had been reconstructed in part, to the extent of the reconstructed portion, formed its west flank. The north wall was an earlier building than the last, and the east side was formed by the west wall of the third construction in the group. There was no indication of any wall, or doorway, having closed the south end, nor was there any access to the area from either of the adjacent buildings. It may possibly have been intended for an open shed. On the floor, however, towards the south end, there were indications of an interior construction of some kind. The remains of two lines of large flat boulders, some 3 feet apart, may be seen on plan (fig. 4) projecting from the east and west walls, enclosing a space some 7 feet 6 inches by 3 feet, which had been paved. Beneath the paving was a bed of rounded water-worn stones for drainage, and the silted material between them showed that the arrangement had been effective. Possibly this has been the site of a store closet.

Still more perplexing than the last were the remains adjoining on the east. Here again there had been walls on three sides of an enclosed area, now represented by a fairly good wall 1 foot 10 inches high on the west, a much reduced wall on the south, and a mere foundation on the east. It will be observed on reference to the plan (fig. 4) that the south-east corner had been rounded, which is unusual.

This area is crossed at 1 foot 6 inches back from the front, or south wall, by a wall of heavier construction, 3 feet wide, which joins the west wall with a butt-joint. An air-vent, 1 foot wide and traceable for a distance of 14 feet to the northward, is carried through this wall in alignment with a corresponding opening in the south wall. The space between the two walls is paved, but there is no indication that a constructed duct led across it, nor that it was open at the east end, as it certainly was not at the west.

The vent is formed with flat boulders on either side, and is still carrying its covers for a few feet at the north end. Adjacent to its termination

there was a bed of peat-ash, but not of sufficient extent to induce the belief that it had been associated with the flue, but the similarity between this duct and that proceeding from the west end of the adjacent dwelling, which is believed to have been a flue, indicate that they had served a similar purpose. There has been so much reconstruction, however, of the buildings on this site that it seems impossible to determine the original purpose of any remaining fragment.

Only one relic was found, and that among midden refuse to the north of the westmost section of cross-wall. This was the portion of a penannular brooch of bronze with a zoomorphic terminal¹ (Pl. XLVII, 6).

Unconnected with the constructions forming Group B were other fragmentary remains in the immediate neighbourhood.

From the front of the doorway at the eastern extremity of the early wall against which house No. VI had been erected, there was uncovered a short length of walling running in a south-easterly direction, but absolutely in isolation owing to the removal, as far as ascertainable, of all other portions of the structure to which it had belonged. To the west of this lay a large kitchen-midden which, on examination, produced the greater part of a bone case for a long comb (Pl. XLVII, 1).

GROUP C.

This group, lying at a lower depth than Group B and so probably of earlier date, was situated at the extreme east end of the hollow, and lay in a north to south direction. It consisted of the southern portion of what appeared to have been a range of buildings (fig. 3), much dilapidated, and passing away to the northward beneath the high bank of sand which forms the boundary of the hollow in that direction.

It will be observed from the plan that the walls had been thicker than in the later buildings, measuring 4 feet across, the same width as the early wall utilised in part to form the south side of house No. VI. They had been constructed in characteristic Viking fashion with a core of compacted earth between two facings of stone. At a point in the west wall the skull of a small whale had been inserted.

Underneath the building lay the remains of an earlier structure which had been formed with walls of wattle and daub erected on a bed of clay 5 inches thick. The carbonised wattles and baked clay, which lay to a depth of 9 inches between the later wall and the primary clay foundation, showed that the house had been destroyed by fire. An examination of the carbonised wattles revealed that they had been of willow, a fact which supplies a clue to the nature of the thicket mentioned above, as having existed in the neighbourhood in Saga times.

The southmost building of the range consisted of a chamber measuring

¹ See p. 100.

18 feet by 14, which had probably been a barn. A doorway, which appeared to have been some 3 feet wide, had given access to the interior from the west by a paved passage through the wall. The north side was formed by a broad partition wall, through which there had been a narrow doorway leading to an adjacent chamber, and subsequently closed. The floor consisted of clay and peat-ash beaten to a hard consistency, and on it there were no remains of a central hearth, nor of any of the characteristic features of a dwelling.

In the south-east corner a kiln had been constructed, obviously for drying grain or fodder, and the rounding of the corner in which it had been placed, both externally and internally, indicated that it was a part of the original building. Over the remains of the kiln and of the adjacent walls, as well as over the greater part of the interior, lay a mass of clay, which seemed to have been used as a core to the walls, or for some other indefinite purpose in the structure.

The kiln measured some 9 feet from the intake of the vent to the back of the chamber, and had expanded from 14 inches or thereby at the former position to 3 feet 3 inches at the widest point at the inner end, where the width appeared to have been reduced by a lining of stones on one side, as shown in the illustration (Pl. XLV, 2), possibly for the purpose of carrying a floor. The floor of the flue was covered to a depth of several inches with peat-ash.

In the south-west corner of the "barn," directly opposite the mouth of the flue, a small rectangular basin had been formed by excavation, with large stones placed against the two walls. It was paved on the floor, and the sides were lined with clay so that it could contain water. In the opposite, or north-west corner, there was a small basin-shaped hollow, sunk some 6 inches below floor-level, and, with a diameter of about 2 feet, lined all round with clay and floored with flat stones (Pl. XLVI, 2). The interior was filled with peat-ash and kitchen-midden refuse, but there was no sign of the action of heat on the clay.

Beyond the partition wall on the north the building was much dilapidated. The west wall was traceable, for a further distance of 36 feet from the cross-wall, by a line of tumbled boulders, and the east wall for a shorter distance. From the latter, at a distance of some 2 feet 6 inches from the built-up doorway, a very narrow wall projected for a short distance into the interior, and at its termination appeared to have abutted on the circumference of a round hearth, or the remains of a second kiln, constructed against the north face of the partition wall. All that remained of this construction was an outline of flat stones set on the circumference and not contiguous. In the course of the exploration of this last-mentioned building, the early wall which passed across No. II to the east of the bath was uncovered and was found to be part of an earlier building than No. VII.

Very few relics came from this group. Such as there were consisted of a number of sherds of the usual hand-made pottery, a strip of thin bronze, obviously a patch for a cauldron, and which had been affixed with paper-fastener rivets, three of which still remained attached; and a long pin of bone, in pieces, and only partially fashioned.

THE RELICS FOUND THROUGHOUT THE EXCAVATIONS.

The relics found were not numerous, and on the whole were characteristic of the later Viking period in Scotland.

Bone.

The objects fashioned from bone form the largest category.

Combs (Small).—There are three combs (Pl. XLVII, 2-4), all incomplete. Two of them (Nos. 2 and 4) have the teeth on one side only, but the third (No. 3) has had on the top of the bow a short subsidiary comb, furnished with finer teeth, and which appears to have extended for only a short distance along the centre. The beak-like ends of this last-mentioned comb, both above and below, are ornamented with a single double concentric circle and a dot.

Of the other two, one (No. 2) is ornamented with two incised parallel lines extending the length of the bow, enclosing between them the row of rivets that hold both sides together, and the teeth, in place between them. The other comb is not decorated in any way.

No. 2 came from the smithy; No. 4 was found on the top of the wall of house No. II; and No. 3 came from the hearth in No. VI.

The type of complete double comb which is not represented here is probably referable to the thirteenth century. As, however, No. 3 was found on a site of an earlier period, and does not conform to the double-toothed comb type, it is probably referable to an earlier date. Its bowed or beaked ends, with double circle and dot decoration engraved upon them, in form resemble those features on a large single comb found in Bergen,¹ and dating from the commencement of the thirteenth century. Both single and complete double combs from the Viking and post-Viking periods are of frequent occurrence owing to the fashion then in vogue for the men to wear their hair long, but a comb of this form appears to be unusual. As in the Oslo comb, the larger teeth are rounded, not rectangular in section as is usually the case in the later combs.

Comb-case.—This object (Pl. XLVII, 1), which is in pieces, and incomplete, has consisted of four tapered strips of bone each $5\frac{1}{2}$ inches in length, of which two broader pieces, $\frac{1}{3}\frac{1}{2}$ of an inch in breadth at the centre, formed the upper part of the case, and the other two strips, $\frac{5}{16}$ of an inch in breadth

¹ Sigurd Grieg, *Middelalderiske Byfund fra Oslo og Bergen*, p. 232.



1. Interior of 1, showing Flagstones on Floor.



2. Interior of Bath Chamber in 1, showing Position of Fireplace left of Entrance.



1. View into Closet to north of Bath Chamber showing displaced Flagstones.



2. Remains of Smithy with Workshop beyond.



1. Remains of Smithy with Hearth in centre.



2. East end of Smithy showing Flue on left of Hearth.



1. Foundations of Dwelling IV.



2. Kerb at outer end of Passage leading to Doorway of IV.



1. Box-like construction at Entrance to IV.



2. Site of Bed in Dwelling IV.



1. Dwelling VI from east showing site of High Seat at west end with Kerb-stones of Dais on left.



2. Remains of Doorway into Dwelling VI.



1. Section of Peat-ash on Hearth, burned broken stones in Kerb, and different styles of masonry in the south wall of Dwelling VI.



2. Vent at west end of Dwelling VI.



1. Dwelling VI, showing Foundations of secondary Cross-wall.



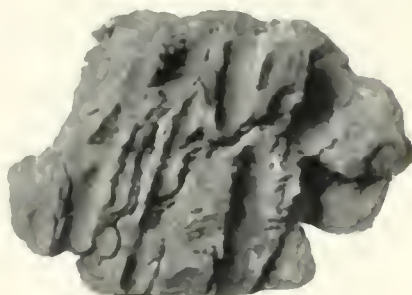
2. Remains of Kiln in corner of supposed Barn, VII.



2.



1.



3.

1. Quern found in Dwelling VI.
2. Basin-shaped Hollow on Floor of Barn.
3. Specimen of Daub showing Impressions of Wattles, from VII.



1-4. Comb-case and small-toothed Combs.
5. Irish Brooch found at Croy, Inverness-shire.
6. Brooch found at Froswick.



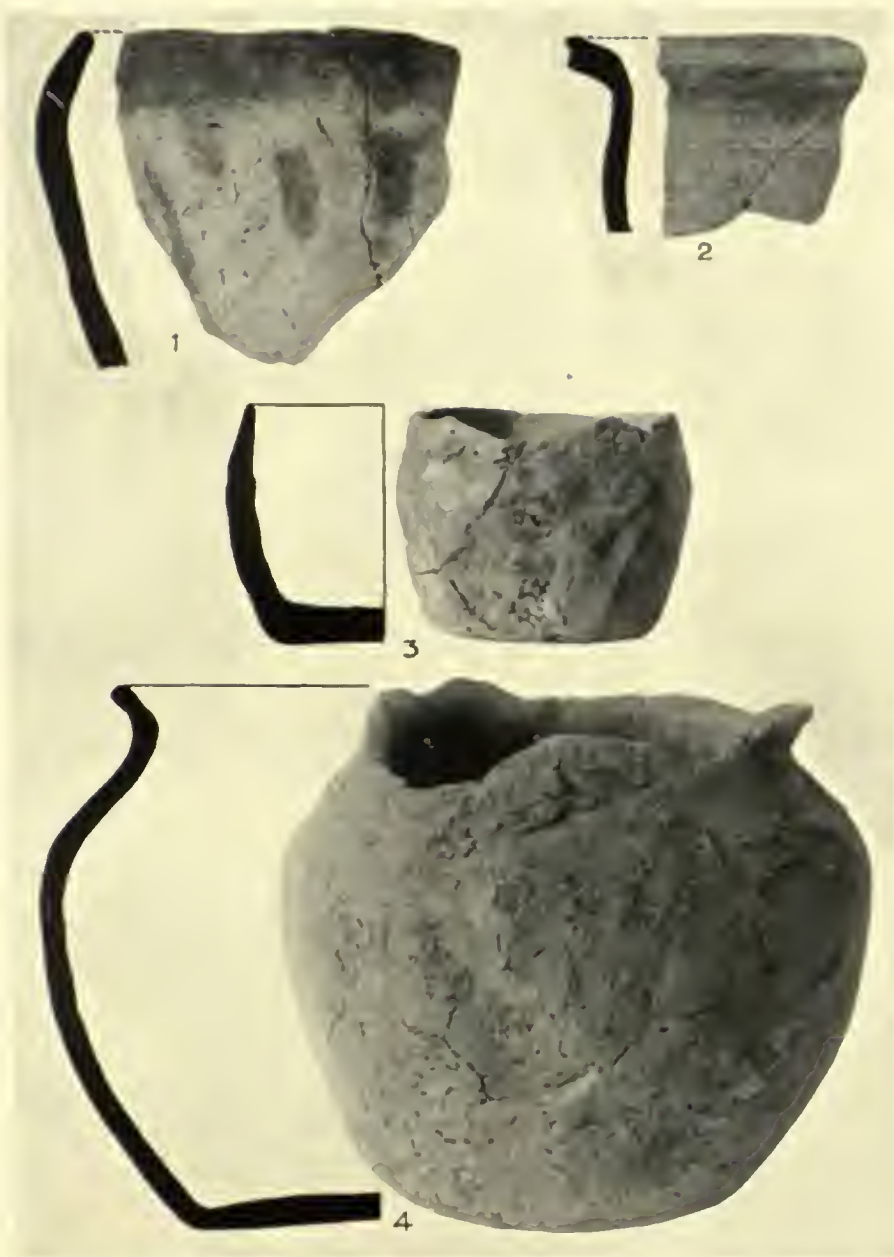
Objects of Bone: 1-9, Pins, and Piercers or Bodkins. 10, Head of Pin. 11-14, Dress Fasteners.



1 and 2. Turn Huckles of Cetacean Bone. 3 and 4. Whorls made from Femur Heads.
5 and 7. Plummet. 6. Sinker of steatite. 8. Hone. 9 and 10. Pot-lids.



1 and 2, Iron Knives. 3, Key. 4, Butt or Socket. 5, Belt Clasp. 6 and 10, Finger Rings.
6, Bracelet. 7, Hammer-headed Pin. 8, Bronze Patch for a Cauldron.



1, 3 and 4. Examples of Viking Pottery. 2. Sherd of a 13th-century Cooking Pot.

at centre and tapering more than the larger pieces to either end, formed the lower parts. The strips forming each pair were placed opposite to one another with the larger strips uppermost, and fastened at one end by single iron rivets to a plate of bone about $\frac{1}{2}$ inch square, inserted between the ends so as to leave space for the comb, and projecting to the extent of one-half its length beyond. One plate, imperfect, remains, and has measured about 1 inch by $\frac{1}{2}$ inch. The other part of this plate has been pierced by two oval holes, one of which is still complete, and shows considerable evidence of wear at its outer edge. Through these holes a cord was passed to enable the owner to carry his comb in a case suspended from his neck.

All four strips are plano-convex in section and decorated with a series of lightly incised parallel lines, between the outer pairs of which, in each case, occurs a row of dot and circle ornament. At a point some $\frac{3}{8}$ of an inch back from the end of the upper strip where the remaining plate occurs, both strips have been perforated with circular holes, the one measuring $\frac{7}{32}$ of an inch in diameter, and the other $\frac{6}{32}$ of an inch. To prevent the comb falling out of the case when it was worn, some temporary fastening was necessary, and this was probably supplied by a tapered pin of bone or wood, which was passed through these holes. The size of the rivet hole still remaining at the opposite end of one strip makes it quite clear that the purpose of these larger perforations was not to hold rivets, and no other use than that suggested appears to meet the case.

The complete length of the comb within the case has been $4\frac{7}{8}$ inches.

Among the combs found at Jarlishof¹ there is one with straight ends measuring $4\frac{3}{8}$ inches in length and pierced at one end obviously for such a pin, while perforations at one end of other combs of the period are not uncommon.² A case for a small comb, found in Oslo, shows also two perforations for a cord in the bone-plate at one end.³ In the long comb found on the Links of Skuill, Orkney, and preserved in the Museum, there are perforations through the plates at either end, and one perforation only at one end of the comb-case. Such an arrangement would obviously save trouble in making it immaterial as to which way the comb was replaced in its case.

As mentioned above, the remains of this comb-case were found in a kitchen-midden of early date, which in respect that it appeared to be situated within the limits of an earlier house was probably not referable to the earliest occupation of the site. It was, however, obviously earlier in date than dwelling No. VI, in which the comb No. 3 was found.

Dress Fasteners.—Four objects (Pl. XLVIII, 11-14), thus generally designated, made from metacarpals of pig, and perforated in the centre of their length, were found. Three of the four came from the earlier

¹ *Proceedings*, vol. lxix, p. 208, figs. 31-34.

² Sigurd Grieg, *op. cit.*, p. 185, figs. 182, etc.

³ *Ibid.*, p. 226, fig. 187.

buildings—two from dwelling No. VI and one from the floor of No. VII—while the fourth was a surface find. Though such objects are usually termed "dress fasteners," there is a difficulty in accepting this explanation of their use, in this case at any rate, from the absence of any signs of wear around the edges of the perforations such as might be expected from the friction of a cord.

Similar objects made either from tubular fragments of bone, or from complete bones as in this case, have been found on sites ranging over a long period of time from the Glastonbury Lake Village¹ to Viking times. One was recovered from the Viking house at Jarlshof, Shetland,² and another, found in a woman's grave of Viking period at Carn nan Bharrick, Isle of Oransay, is preserved in the National Museum of Antiquities. This last was found associated with a pair of iron shears, and, typical details of a woman's attire, a pair of oval brooches of bronze and a pin with a movable ring head.

If they had really been dress fasteners, it is singular that they do not occur on Viking sites more frequently, and are only represented by isolated examples.

Pins, Piercers or Bodkins. Pins.—There are among the relics three small pins (Pl. XLVIII, 7-9), with rounded heads, varying in length from $1\frac{5}{16}$ inch to $1\frac{3}{4}$ inch. Two of them taper directly to the point, while the third shows a definite swelling towards the point, indicating its probable use in some textile fabric. A short halberd-shaped object (Pl. XLVIII, 10), $\frac{5}{8}$ of an inch in length, has apparently been the head of another pin. All these objects were surface finds.

Piercers or Aids.—Of these there are eight, six of which are illustrated in Pl. XLVIII. Of the others, one is represented merely by the upper end, and the other by a partially shaped object in process of manufacture. The largest example (No. 4), made from the cannon bone of an ox, or deer, measures $5\frac{1}{2}$ inches in length. It has been much smoothed by use at the pointed end, and was found while opening out one of the closed doorways on the north wall of No. IV. Another, with a certain amount of artistry in its production (No. 3), has been likewise fashioned from a cannon bone of an ox, or deer. It was found at a high level in clearing out No. VII. No. 5, measuring $2\frac{7}{8}$ inches in length, made from the cannon bone of a sheep, was found on the floor-level of No. VI. No. 6, measuring $4\frac{1}{2}$ inches in length, was found in a kitchen-midden in front of the entrance to No. IV.

Included with the bone piercers is one of polished deer-horn, not illustrated, made from the brow tine of a red deer's antler. It is of coarser form, with a larger point than any of the others, and was found clearing off sand outside on the north-east of No. VI.

Eyed Piercers.—There are two eyed bodkins, or needles (Pl. XLVIII,

¹ Huxford and Gray, *Glastonbury Lake Village*, vol. II, p. 400. ² *Proceedings*, vol. LXIX, p. 317.

1 and 2). The larger, No 1, is imperfect, and measures $4\frac{5}{8}$ inches in length. No. 2 is of a form frequently found on Viking sites, and measures $3\frac{1}{4}$ inches in length. Both were surface finds.

Turn Buckles or Door-snecks.—Three of these objects, made of cetacean bone, two complete (Pl. XLIX, 1 and 2) and one represented by a half only, were found. The complete examples measure respectively in length $4\frac{3}{8}$ inches and $4\frac{1}{8}$ inches. No. 1 is pierced with a circular perforation, for the pin on which it revolved, near its centre, while No. 2 has a similar perforation at $1\frac{1}{16}$ inch from one end. Both perforations are about $\frac{1}{4}$ of an inch diameter. The imperfect example has been broken across the pin hole, which has probably been towards one end, as in the case of No. 2.

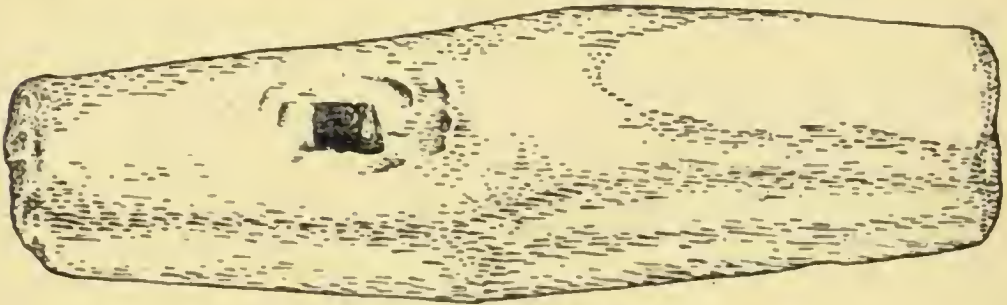


Fig. 5. Object of Cetacean Bone. (1.)

These objects resemble the wooden snecks formerly used on the doors of cupboards, and they possibly served a similar purpose.

Two similar objects, one complete and one represented by one-half only, were recovered from a kitchen-midden in the immediate vicinity of the Viking dwelling of Jarlshof, Shetland.¹

Object of Indeterminate Use.—An object made from cetacean bone (fig. 5), which in general appearance resembles a turn buckle, on closer examination appears to have served some other purpose. It measures $5\frac{1}{4}$ inches in length, $1\frac{1}{8}$ inch in breadth at one end, and $1\frac{1}{4}$ at the other. At $1\frac{1}{2}$ inch from the narrower end the block has been pierced by a hole for a bolt, $\frac{3}{8}$ of an inch square in section, and the upper surface has been slightly lowered at this point to receive a circular iron washer beneath the bolt head, the rust of the iron being visible on the surface. It is thus obvious that it was not intended to revolve. The underside of the object has been cut back on a level from a point just in advance of the hole to the end, so that if the block was bolted to a flat surface there would be a space of $\frac{1}{2}$ an inch between it and the latter at the extremity. It is clear from the size of the perforation and the evidence of the washer that it was intended to be firmly fixed. Possibly it was a cleat.

¹ *Proceedings*, vol. lxi, p. 203.

Whorls.—Hemispherical whorls made from the heads of ox femurs (Pl. XLIX, 3 and 4) were found throughout the area excavated, and totalled 15 in number. As a rule they have been rudely fashioned with little effort to give them any elegance of form. Spindle whorls from femur-heads are of frequent occurrence in prehistoric and later excavations, and are by no means confined to Viking sites. They were found by Pitt Rivers in Romano-British excavations at Woodents Common, also by Sir Henry Dryden at Hunsbury or Danes Camp, near Northampton. They were among the relics from the Keiss broch in Caithness, and the broch of Burrian in North Ronaldshay. Though now probably too light to effect their original purpose, they would be sufficiently heavy before the osseous matter, which they contained, perished.

Bronze.

Belt-chape.—A belt-chape (Pl. L, 5), $2\frac{1}{2}$ inches in length, with a rivet round which the end of the strap has been passed across the open end, was found about 1 foot above the floor-level on the north side of No. VI.

Brooch.—About $\frac{3}{4}$ of a penannular brooch of Irish-Celtic design (Pl. XLVII, 6), and which had originally been coated with silver, was found among kitchen-midden refuse covering the floor of what appeared to have been a small chamber to the north of the inner cross-wall, and to the west of the vent which traverses the indeterminate foundations lying to the eastwards of No. VI. The only indication of date which this find-spot confers is derived from the fact that the west wall of dwelling No. IV, presumably of thirteenth-century date, actually lay on the top of it; moreover, the period of the building in which the object was found appears to have been coeval with that of No. VI adjacent, which in its turn was secondary to the massive wall which in part contains it on the south. The date of deposit of the brooch might thus be as late as the twelfth century.

The brooch has measured when complete some 2 inches across in either direction. As will be seen from the illustration, the terminal is more realistic in conception of a dragon than that of any other example of the style so far recorded. The head is outlined by a rounded moulding, which swells to a collar at the junction of the bow. The eye is well defined as a pointed oval, and enclosed with a narrow moulding to represent the eyelid. The surface is ornamented with two rows of herring-bone, or feather ornament, extending respectively to the ends of the jaws. The outer ends of both jaws terminate in volutes, and from the top of the upper jaw a spur-like projection, also hatched with herring-bone ornament, suggests a horn, or an ear. In the centre of the bow there is a sunk oblong panel within a raised moulding, $\frac{3}{4}$ of an inch in length, containing in the centre a rounded boss, while the surface of the panel is enriched with threads of interlacing ornament indifferently conceived and executed.

The bow is plano-convex in section, measuring $\frac{1}{4}$ of an inch in breadth by $\frac{1}{8}$ of an inch in depth.

Though a possible twelfth-century date has been suggested for the deposit of this brooch, that date has, of course, little bearing on the date of the object itself, other than to supply a limit beyond which it cannot have been made. The possibility is that the brooch belongs to a considerably earlier date. The evolution of the Irish brooch has been treated of by various authors, and it is agreed that the source from which it sprang was a penannular fibula with zoomorphic terminals of a stylised form, which made its appearance in Romano-British times, and examples of which have been found at numerous sites in Britain. It is not intended here to follow the various steps in the evolution of this brooch through phases which show a farther and farther departure from the zoomorphic character, till it is almost lost in the splendid achievements of such brooches as those from Tara, Ardagh, Hunterston, etc. The history of the development over the five centuries from A.D. 500 to 1000 has been demonstrated by Mr Reginald A. Smith, F.S.A.,¹ and other authorities have likewise treated of the subject. At a certain point in this evolution, somewhere about the ninth century, there appears to have been some more definite return to zoomorphism in the treatment of the terminals, and we are fortunate in having an approximately dated example, the Croy brooch (Pl. XLVII. 5), found at Croy in Inverness-shire, as illustrating this process, and supplying us with a type from which the Freswick brooch may have descended. The Croy brooch, which was found associated with a coin of Cænwulf, King of Mercia, who ruled from 796 to 822, has been dated by Mr Smith to about the year 820. It will be noted that the terminals consist of two motives, a triangular figure which occurs at the end of the bow, with a spherical motif in front of it. If we eliminate the latter we are left with a figure which might well have suggested, or itself have been suggested by, the gaping head of a monster, and which has several features in common with the Freswick head. Here, we have indicated, the profile head with open jaws, the ridge or collar that cuts off the bow, and the moulding carried along the edge of the jaws, and turned up at each respective end so as to form a slight volute. There is also an eye, a triangular figure which, though quite suggestive, lacks the developed realism of the other, while the surface is hatched, though not exactly in the same manner as on the Freswick relic. To compare the brooches farther: in the Croy brooch, in the centre of the bow there is a panel containing a central boss, surrounded by interlacing threads, executed in competent style, and in that respect differing from the degenerate rendering on the Freswick example. This tendency to evolve a head with gaping jaws has been suggested by Mr Reginald Smith, and in the Freswick brooch we may well have

¹ "Irish Brooches of Five Centuries," *Archæologia*, vol. lxy, p. 223.

an example of the complete evolution occurring at a late date in the series.

Finger-rings.—Two penannular finger-rings with tapered ends were found (Pl. L, 9 and 10). They are both made from thin strips of bronze. One is imperfect, but the other measures $\frac{5}{8}$ of an inch in diameter. The imperfect example was found to the right of the doorway outside No. IV, and the other came from the upcast at the west end of No. III.

Bracelet.—A bracelet, evidently for a child's wrist (Pl. L, 6), formed from a piece of bronze wire, $\frac{1}{8}$ of an inch in thickness, was found among the upcast soil when the deep wall crossing No. II at the back of the bath, was being exposed. When recovered it was slightly out of shape, but has now been restored to its original form, showing an interior diameter of $1\frac{11}{16}$ inch. It is slightly penannular, and has remaining at one terminal a collar of bronze, the corresponding collar being missing. One surface is decorated with a series of short transverse notches.

Plates and Patches.—As in the Viking house at Jarlshof there were found a number of fragments of plates of bronze, most of which had been used as patches on large bronze vessels, of which the largest still retained in them the rivets of paper-fastener type by which they had been attached (Pl. L, 8). Two small pieces are each perforated with two circular holes of small diameter, evidently for pin rivets. The distribution was general. One piece with paper-fastener rivets was recovered from beside the bed-platform in No. IV, and another from the midden filling in No. VII.

Pin.—A hammer-headed pin of well-known Viking type (Pl. L, 7) was found at the west end of the smithy No. III, from what was probably the site of the west wall of the building which had been torn out. The pin is complete, except for the actual point which is wanting, and measures $4\frac{7}{16}$ inches in length.

Glass.

A small barrel-shaped bead of green glass, measuring $\frac{3}{16}$ inch in longest diameter and weathered on the surface, was found on the surface of the hollow.

Coin.

A single specimen of coinage, a silver penny of Henry III. of England, inscribed "Willm on Lund," from the Mint of London and dating from 1258-1272, was picked up from the surface at the seaward end of the area.

Iron Objects.

Knives.—Four knives were found. Two were of the pronounced hog-back form shown by Pl. L, No. 1. One (Pl. L, 2) is a narrow-pointed blade, triangular in section, with a comparatively broad back. One blade was too much decayed for determination of form. Both the former are

types of blades characteristic of the early mediæval period, and similar blades appear among the relics from Dunadd,¹ Argyllshire, preserved in the National Museum. Identical examples were found recently in the stone Fort of Cahercommain in County Clare by Dr H. O'Neill Hencken.²

Pl. L, No. 3, appears to be the remains of a key, and No. 4 of the same plate the remains of a butt, or a socket. There was also found the remains of a pair of shears consisting of the spring and upper portion of one leg.

Pottery.

The sherds of pot recovered were numerous and of two distinct classes: first, a limited quantity of wheel-made mediæval ware, unglazed, or only so treated to a small extent; and second, a considerable quantity of potsberds of the quality which, from finds in Shetland and elsewhere, may now be regarded as characteristic of the Viking period.

Mediæval Ware.—The mediæval ware was, with the exception of one small piece which was found above floor-level in No. VI, all referable to the later occupation. It consisted of sherds of some three or four vessels, unglazed, or only partially so, on the shoulder and neck. With one exception it is of a reddish-brown colour, and the two bases that occur among the remains are sagging, one markedly so, and the other slightly. There is no indication of thumbing around the bases. The remains of a large bag-shaped pitcher with an interior diameter at base of $7\frac{1}{2}$ inches were found for the most part on the floor of No. I, and in the passage leading to the bath-chamber on the north of that structure, and what was evidently a small sherd of the same vessel, was recovered from the floor of the bath, beneath the heap of clay in the north-west corner. A portion of what is evidently the handle was found on the floor of No. I. It has a single groove down the centre lengthwise, and deep finger impressions on either side at the point of juncture with the neck. This vessel has evidently been for holding water, and may well have been used in the bath-chamber.

The base of a cooking pot, sagging, and much encrusted with soot, was found in a kitchen-midden in front of No. IV. The interior diameter of the base is $4\frac{1}{4}$ inches.

A portion of a handle, circular in section, but with a ridge along the top, was found while clearing to floor-level in No. IV.

The only piece of mediæval ware with any distinctive character was the sherd (Pl. LI, 2), previously referred to (p. 86), comprising part of the rim, of light red ware, soot-encrusted on the outside and so evidently part of a cooking pot, with a diameter at mouth of some $9\frac{1}{2}$ inches. The rim is everted with an approximately rectangular section, and is

¹ *Proceedings*, vol. lxiv, p. 118, fig. 5.

² *Royal Society of Antiquaries of Ireland*. Extra volume for 1935.

ornamented on the upper surface with three wavy, narrow, parallel, continuous ridges. The outer surface, as far as revealed by the fragment, is decorated with zones of parallel lines in relief. This sherd was found on the level of the wall-head of No. IV when the wall was being removed to explore the structure beneath. It must therefore obviously refer to the latest occupation. A very close parallel is to be found, as previously stated, in a sherd from Rayleigh Castle, the occupation of which ceased in the latter half of the thirteenth century, and which is preserved in the Prittlewell Priory Museum, Southend-on-Sea.¹ A late thirteenth-century date may fairly be claimed for these few mediæval sherds.

Viking Pottery.—Plate LI, 4, illustrates a cooking pot, complete except for some slight damage at the rim, which was found by Mr Simon Brenner, when the excavations were not in progress, set upright in the sand, in front of the "naust," No. V, and forwarded by him to the Museum. It is of typical Viking hand-made ware as found in Scotland, with numerous impressions of vegetable matter in the body, and it is heavily encrusted with carbon on the outside. In form it is globular, with a flat base and an everted rim. In height it measures 6 inches, and in breadth at the bulge $6\frac{1}{2}$ inches. From an adjacent spot there were recovered sufficient fragments of a much smaller pot (Pl. LI, 3) to enable its reconstruction to be effected. It has been fashioned with a very uneven surface, and from the encrustation of soot on the surface, appears also to have been used as a cooking pot. It has measured $2\frac{1}{2}$ inches in height, by $3\frac{1}{2}$ inches in diameter at the bulge. Both the above vessels are flat-bottomed.

The general character of the ware, all of which is hand-made, is, besides the use of grass in the paste, a coarseness of technique which is displayed in the very uneven surface of the exterior. The body is hard and well-fired, varying in colour from buff to grey, and black. The pots are in general encrusted with soot only on the upper portion of the exterior surface, indicating that they had been sunk in the embers up to the shoulder. There is invariably an encrustation of carbon also in the interior. While the general character of the ware is uniform, there is a considerable variety in the treatment of the rims, as shown in the sections illustrated (figs. 6). Finger impression has been applied as a decoration on the rims of one or two vessels (fig. 6, No. 4), while a single rim, part of a pot of large size, apparently of 9 to 10 inches in diameter at the mouth, has been ornamented with a series of small, irregularly placed notches cut across it (fig. 6, No. 18). Some oblique cuts placed one inch or so below the rim of another sherd may have been part of a decorated scheme of the complete vessel (fig. 6, No. 20). Another sherd, not illustrated, is decorated with a series of deep vertical grooves, probably finger impressions, extended around the

¹ For this information I am indebted to Mr Gerald C. Dunning of the Royal Commission of Ancient Monuments, Wales, etc.

rim. A sherd of a pot with an indicated diameter of some 6 inches (Pl. LI, 1) has been decorated with a series of broad streaks, in some dark



Fig. 6. Sections and decorated surfaces of Rims of Viking Pottery found at Freswick.

brown colouring matter. Several pieces show perforations evidently made to effect repair. The bases appear to have been flat-bottomed. The cooking pots, as far as measurable from the sherds, show indicated diameters at the mouth of from 10 to 11 inches.

While the more sophisticated forms and decorated rims found at

Freswick were entirely absent from the pottery found in the Viking house excavated at Jarlshof in 1934, yet in both respects they recall ceramic styles of an earlier period found in a prehistoric site there.¹ Pottery with characteristics very similar was recovered by Professor V. Gordon Childe in the excavation of a promontory fort at Larriban, or Larry Ban Head, on the coast of Antrim, in 1935,² in regard to which he remarks on its being a "very characteristic North Irish fabric." The typical cooking pot found at Jarlshof, a barrel-shaped vessel, is represented most closely by No. 10 of fig. 6.

It was not found possible to restrict any form to either of the periods represented by the three groups of buildings. On the whole, the sophisticated rims appeared to belong to the late rather than to the earlier periods. A number were found in the material with which house No. VII had been filled up.

Stone.

Hones.—Twelve sharpening stones or hones, of quartzose schist from the Moine schists, were found on various sites, five of them coming, as might be expected, from the smithy. They are all, with one exception, of the haunched type, the exception being a straight-sided hone of black phyllite or clayey schist, a different material from that of any other. Except the last mentioned, all are much worn and incomplete. A typical example is shown in Pl. XLIX, 8.

A sharpening stone, probably of Caithness flagstone, to be used for some narrow, round-pointed metal instrument, has a deep groove the length of each of the two opposite faces, and is considerably abraded at one end.

Plummets of Quartz, etc.—A number of small blocks of quartz, varying in weight from $\frac{1}{2}$ lb. to 1 lb. 2 oz., were found on the site of the "naust" and elsewhere. Each block presents one flat surface, and towards one edge there has been an attempted perforation for a cord, in one case only completed. A specimen is illustrated (Pl. XLIX, 5). The process of perforating a block of quartz must have been difficult, for several of these blocks have been broken in the attempt. Quartz would be selected for use as plummets owing to its high specific gravity.

In one instance an ovoid sandstone pebble, similarly with one flat side, shows an incomplete perforation on one edge, owing to a fracture (Pl. XLIX, 7): and another, with a fractured groove on the flat side, has a groove continued across the opposite face. A small block of quartz, also flat on one face, has been grooved round the centre of the other sides, evidently to hold a cord.

¹ *Proceedings*, vol. lxviii, p. 287, fig. 54.

² Professor V. Gordon Childe, "A Promontory Fort on the Antrim Coast," *The Antiquaries Journal*, vol. xvi, p. 188.

Polishers.—There are two polishers, an ovoid pebble of porphyry, flattened by use on each side, which was found in the smithy, and a larger water-worn ovoid pebble of quartzite. The latter at one end has been reduced to an angular section by rubbing, and at the opposite end has been slightly abraded.

Pot-lids.—Three pot-lids of stone, from $2\frac{7}{8}$ to $3\frac{3}{4}$ inches in diameter, were found, all in No. VI, two of which are illustrated (Pl. XLIX, 9 and 10).

Querns.—Several pieces of the grinding stones of rotary querns were found fashioned from garnetiferous mica schist. This material, which was also used for querns by the Vikings in Shetland, where it is plentiful, likewise occurs in the west and south parts of Caithness. One of the pieces, which amounts to somewhat less than one-half of an upper stone, has had a countersunk circular area about 2 inches wide around the central opening, and though much weathered still shows the base of the socket to hold the vertical wooden handle with which to turn the stone.

The upper stone of a rotary quern, complete but for a chip off one end, was found, as above related, covering a post-hole at the east end of No. VI. It is ovoid in outline, with a hole for a handle at one end, and measures $16\frac{1}{2}$ by 13 inches.

Steatite.—A piece of the rim, slightly curved, and 14 inches long, of a very large steatite vessel was found to the north of No. VI, and another fragment on the floor-level of the house.

Weights.—A number of larger ovoid pebbles, with grooves cut in opposite faces, and across the end, to hold a cord or rope, were also found. Such stones are still used at the present day for weighting lobster creels.

Sinker.—A pointed oval pebble of steatite, with a perforation at either end for a cord, was found in No. III, and, on the analogy of the lead object used at the present day, was probably a "line sinker" (Pl. XLIX, 6).

In addition to the foregoing there were found a number of flat-sided oval pebbles, some 6 to 8 inches in length, much chipped and indented at the ends and on the edges of the sides. For the purpose for which these were used, the ingenious theory was advanced by Mr Simon Bremner, a corresponding member of the Society, and the foreman at the excavation, that they had been employed in boat-building to "hold on" against the point of the rivet when it was being driven in.

The Viking house discovered at Jarlshof in Shetland in 1934 was probably a long house, as being of earlier construction than the well-preserved example, No. VI, found at Freswick, but in respect that the former no doubt continued in occupation until a date contemporary with the Caithness example, it is of interest to contrast the cultural evidence found on both sites. The Freswick settlement discloses by its relics a class of occupants in poorer circumstances, as the finds were fewer in proportion

to the area uncovered, and as a rule, also, they were ruder in character. There was a complete absence of the scribed slates which were such a remarkable feature of the Jarlshof finds, nor were there found at Freswick any bone pins to compare with the finer examples found in Shetland. While bones were proportionately numerous among the relics from Freswick, they were all of the hunched form, and there was entirely absent from among them any example of the small black bones, quadrangular in section and perforated at one end for suspension, which occurred in considerable numbers at Jarlshof—a type which is not infrequently found associated with Viking relics. At Jarlshof loom weights were found in great numbers, at Freswick they were conspicuously absent. Whereas at Freswick the most common relics were whorls made from the femur-heads of ox-bones, not a single example of such a whorl was recovered at Jarlshof. In both places remains of querns made of garnetiferous schist were found, and while at Jarlshof remains of vessels of steatite were common, at Freswick they were very rare.

The most remarkable contrast in the finds from the two sites is to be found in the pot-rims. The ware from both places is identical, and distinct from other wares so far discovered in Scotland, by the evidence it bears so fully of the numerous impressions of the husks and straw of oats on the body, but the forms of the rims differ materially. The Shetland rims of the Viking period are very simple, being as a rule either slightly everted or curving inwards in the manner of a barrel,¹ while the Caithness examples supply, as already mentioned, a variety of forms. Whether such early forms were extant among the native population of the county at the date of the Viking invasions can only be learned by excavations on native sites. There is a probability, however, that they had been imported from Ireland.

In both settlements numerous fragments and patches of sheet bronze were found, showing that large bronze cauldrons were still in use. The objects for which a use as plummet is suggested were peculiar to Freswick, as also the pebbles supposed to have been used by boat riveters. The characteristic combs of the period are common to both.

The interior arrangements of the principal house (No. VI) at Freswick are in every way characteristic of Viking culture, and the general impression derived from the excavation is that the Norwegian settlers in Caithness brought with them a distinctive culture of their own, which through the period of two or three hundred years in which they flourished in the county, remained entirely unaffected by the indigenous culture of the region. The conclusion to be adduced from these circumstances is that the immigrants either lived in complete isolation among the native inhabitants, or, as seems more likely, that they ousted them from the plains and

¹ *Proceedings*, vol. lxi, p. 306.

fertile regions to seek out a scanty subsistence among the moors and mountains that form the western and southern confines of the county, and where the place-names and the people are still for the most part Celtic.

REPORT ON THE ANIMAL REMAINS. By Miss MARGERY I. PLATT,
of the Natural History Department of the Royal Scottish Museum.

The majority of the bones are of a small but mature *Ox* of shorthorn variety.

The remainder of the species present are given in order of their numerical importance:

Pony, very small variety like the Shetland race.

Dogs, remains of three, one very small and fox-like.

Sheep, extremely heavy-horned variety.

Red Deer, *Cervus elaphus scoticus* Lomberg.

Grey Seal, *Halichærus grypus* (Fabricius).

Pig.

Gannet, *Sula bassana* (L).

Cod, *Gadus callarias* L.

In conclusion it gives me pleasure to acknowledge my indebtedness to Admiral Sir Edwyn Alexander Sinclair, G.C.B., etc., the proprietor of Freswick, for having so readily acceded to my request for permission to excavate, and also to the Messrs Gullick, the farmers, for according their permission, and helping wherever possible.

Also to Mr Edwards, the Director of the National Museum of Antiquities, for having directed my attention to Freswick, and for much assistance in the production of this paper.

My thanks are due to Miss Margery I. Platt, M.Sc., of the Royal Scottish Museum, for her report on the animal remains; as well as to Mr David Balsillie, B.Sc., of the same Museum, for determining the character of mineral specimens, and Mr M. Y. Orr, of the Royal Botanic Garden, for having identified the vegetable remains.

Dr Sigurd Grieg, of the University Museum of Oslo, helped me to date the combs, while Mr Gerald C. Dunning, of the Royal Commission on Ancient Monuments in Wales, etc., gave me valuable assistance in dating the sherds of mediæval pottery.

I am grateful to Mr R. B. K. Stevenson, Keeper in the National Museum of Antiquities, for the valuable assistance he gave me over a period of two weeks on the spot. My excellent team of local workmen, under Mr Simon Brenner, tackled their job with such zeal and interest beyond the mere terms of their employment as to deserve special recognition.

I owe thanks to Mr F. W. Robertson, Ph.D., of the County Library at Wick, for having lent me a tent and furniture, and other acts of kindness.

While, lastly, to the Council of the Society for having allotted to me the generous contributions from the excavation funds that made the excavation possible, I am under a deep debt of gratitude.

The relics have been kindly presented to the National Museum of Antiquities of Scotland by the proprietor.

II.

THE AGRICOLAN FORT AT FENDOCK. BY I. A. RICHMOND, M.A., F.S.A., F.S.A.Scot., AND JAMES MCINTYRE, F.S.A. WITH CONTRIBUTIONS BY J. A. STANFIELD, ERIC BIRLEY, M.A., F.S.A., AND A. RAISTRICK, Ph.D., M.Sc.

(i) INTRODUCTORY.

The southern border of the Highland massif is formed by the great boundary fault on the northern limits of Strathearn and Strathmore. Here the Highlands begin and the Lowlands end, and beyond this point, before the age of firearms, no invader of Scotland pressed. It has long been known that here too the permanent garrisons of Rome reached the farthest north-west frontier of that great empire, seizing the points where the principal rivers debouch into the plain, and thus controlling entry to and exit from the Highlands. The forts and temporary camp at Dealgin Ross,¹ by Courie in Strathearn, were among the first Roman sites to be observed north of the Antonine Wall. Later, the legionary fortress² and forts at Inchtuthil, where the Tay emerges from the Dunkeld gorge, attracted attention and eclipsed all other Roman sites in the district. Earlier still, however, as Sir George Macdonald has shown,³ a Roman fort had been discovered by Colonel Shand in Glenalmond, at the point where the river Almond, leaving the narrow defile of the Sma' Glen, turns eastward towards the Tay. At that time the rampart and ditch of the fort were in good order, as described⁴ by the contributor to the *Statistical*

¹ The site was first described by Gordon, *Itin. Sept.*, 39, in 1726.

² *Proceedings*, xxxvi. 182-212. The site was first observed by Maitland in 1757, *History and Antiquities of Scotland*, i. 199.

³ *Proceedings*, lxxi. 374. The account is dated to 1788.

⁴ *S.A.*, xv. 250; cf. *Proceedings*, lxx. 400. Dr D. M. Forrester, of Broughton near Biggar, has shown us a *Sketch of water-tracks in Glenalmond*, made by the Duke of Atholl's agent, J. Stobie, on 21st January 1797. This shows the fort ramparts in good order except where covered by the farm of Easter Fendock.

Account. Later, ploughing reduced them to low features difficult to discern, and the site was temporarily lost to knowledge for field-workers, who selected two unsatisfactory candidates for recognition as Roman earthworks, rightly dismissed¹ by Christison as negligible. The re-discovery of the site reported in the eighteenth century came in 1936, and has already been described² in these *Proceedings*.

The position is a good one, not unlike others of Roman choice, for example, the fort of Brough-by-Bainbridge in Wensleydale, or the newly-discovered fort at Loudon Hill in Ayrshire. The glacier which once occupied the Sma' Glen has formed³ a bold terminal moraine, centred on the mouth of the valley. This moraine is now divided by erosion into a series of irregular hummocks, most of which are unsuited to accommodate a Roman fort. None in fact exceeds, and many fall far below, three hundred feet in width, whereas the Roman engineer preferred to have at least four hundred feet in hand. Making the best, however, of the terrain at their disposal, and obviously desirous of selecting a site in full view of the glen, the Roman surveyors chose the largest and most regular hillock available, and planted upon it a fort 598 feet long and 320 feet wide. The unusual proportion, so different from the square or terriate form normally chosen for Roman forts, is entirely due to the difficulty in finding a suitable position.

Tactically, the site chosen (Pl. LII, 1 and fig. 1) is good. The little plateau falls steeply on every side, southwards to the Fendoch Burn, and elsewhere to marshes indifferently drained by a nameless streamlet on the north. On the east the Romans did not occupy the tapering tail of the moraine, but supplied extra defences (see p. 112), intended to cancel any apparent advantage gained by massing there for an assault. True, the site is overlooked by hills on all sides; but this circumstance, disadvantageous in the days of long-range weapons, was of little moment when only hand-thrown missiles were in question. Much more important was the advantage conveyed by good lateral communications. To east the valley of the Almond offered an easy passage towards the site of Bertha, at the junction⁴ of that river with the Tay. To west the wide valley of the Fendoch Burn gave almost immediate access to Strathearn and the fort of Dealgin Ross. It is not known that the Romans provided this route, controlling the very fringe of the Highlands, with a metalled road, though the observation by Shand⁵ of a road leading from the south towards Monzie might suggest that they did so. But it is certain that the route was recognised and employed as a natural passage. No Lowland invader had ever pushed

¹ Christison, *Early Fortifications in Scotland*, 92-3, fig. 29.

² *Proceedings*, lxx. 400-406.

³ We are indebted for geological comments upon the site to Dr K. St Joseph.

⁴ *Proceedings*, lili. 145-152.

⁵ Quoted by Chalmers, *Caledonia Romana*, i. 146.

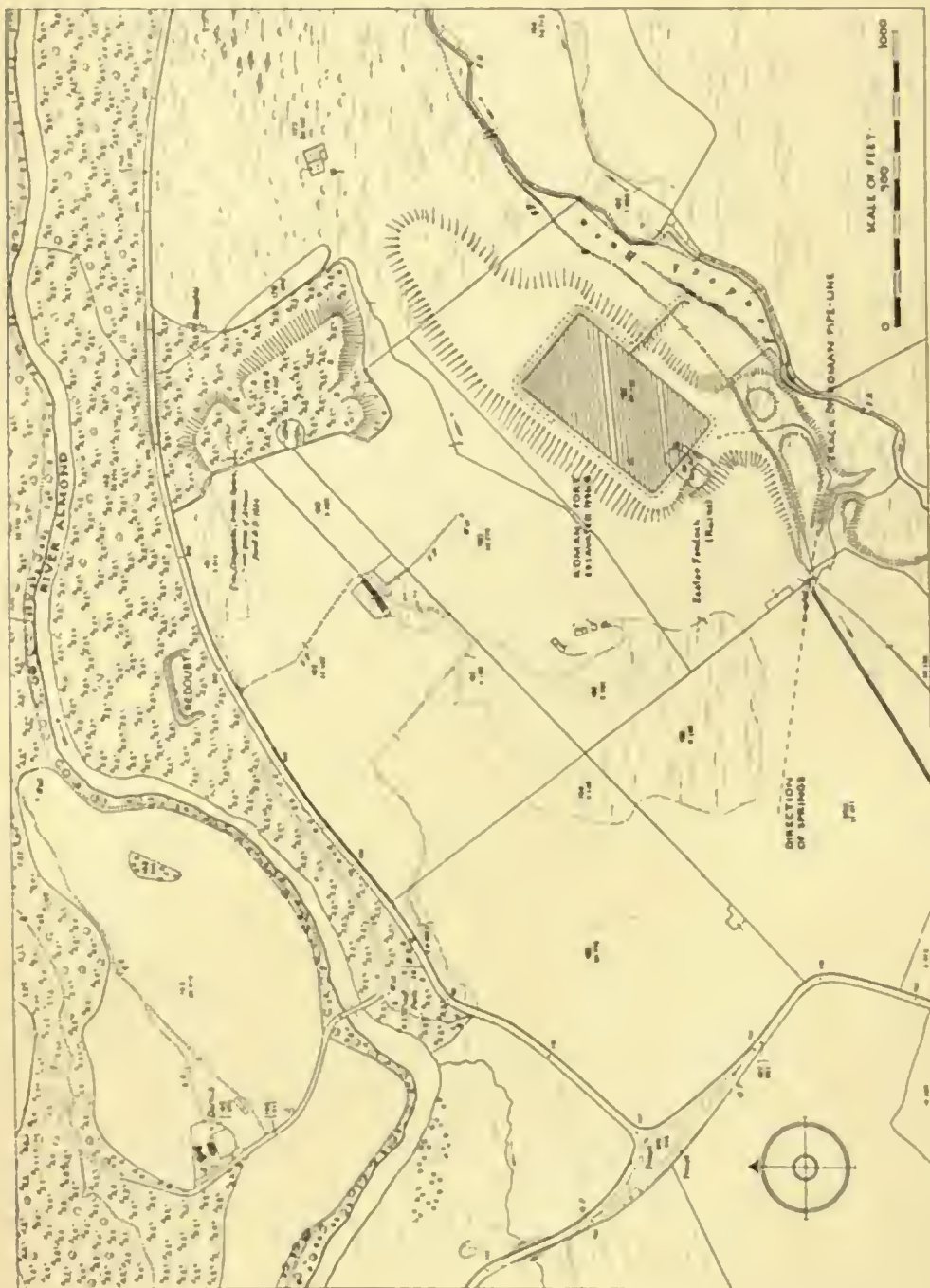


Fig. 1. The Site of Fendloch Fort.
(Based upon the Ordnance Map, with the sanction of the Controller of H. M. Stationery Office.)

closer to the Highland line, and none ever chose the positions for controlling it with greater ability. The significance of the Sma' Glen in Highland communications need only be emphasised by two observations. This was the gap chosen by General Wade for his main line of road into the furthest Highlands; while to-day the same pass carries a principal highway to Inverness, the natural centre of Highland administration.

(ii) THE DEFENCES.

(a) *The rampart of the fort was examined in 1936 and 1937. It had been built in turf, but its reduced state and the porosity of the soil below it had induced heavy leaching, with the result that the lamination typical of turf-built structures had been reduced in definition (Pl. LII, 2). The ploughing down of the front also rendered the dimension somewhat difficult to estimate. In 1936 a section at the south-west angle gave a width of over 20 feet, where the rampart impinged upon an oven. Subsequent sections suggested that this estimate is rather too high. At the north and south gates, the post-holes of the tower denote a minimum width of 17 feet, for laid turf was everywhere visible; and this cannot be far from the truth. A second section at the south-west angle (Pl. LII, 2) revealed an interesting detail as to treatment of the back. While the front was entirely broken away, the back still exhibited an offset of turfwork at the foot of a sharp slope, resembling the arrangement¹ of Hadrian's Turf Wall and of the rampart of the inner annexe at the Antonine fortlet of Chew Green.*

The profile of the finished structure thus resembled in general type examples already known. It began with a sharp slope at the back, and it is not likely that the front stood less steeply. Soon, however, the rearward slope must have become more gentle, in order to reduce the width of the rampart to a walk of some six feet at a not excessive height. The steep slope at the base of the back is to be explained² as intended to prevent access to the rampart-walk except at authorised points. No accurate estimate of the original height can be made upon this basis; but a rough calculation is nevertheless possible. Supposing the front to have stood at an angle of about 75 degrees, not an unreasonable slope for turf-work, while the back, after some 4 feet of almost vertical rise, assumed an angle of about 42 degrees, the angle of rest, a reduction in width from 17 feet to 6 feet would be effected at a height of approximately 12 feet. An addition of 6 feet for merlons and parapet would give an over-all height of 18 feet.

The walk on a turf rampart was normally framed in timber with a

¹ *Cumb. and Westmorland Arch. Soc. Trans.* ser. 2 (henceforward cited as *CW*), xxv. 222-223; *Archæologia Aeliana*, ser. 4 (henceforward cited as *AA*) xiv. 143, for sharp slope at Chew Green.

² *CW*², loc. cit.

surface of corduroy or duck-boarding, as frequently illustrated on Trajan's Column,¹ though a gravel walk has recently been found in position on a low turf rampart at Petuaria.² When gravel or kindred material was available, as at Fendoch, it could be spread on top of the duck-boarding, so as to reduce the risk of slipping while strenuously engaged in defence. The front, as already observed, would be protected by boarded or wattled parapet and merlons. The merlons would be widely spaced, as on Trajan's Column,³ so that men armed with shields and spears might occupy the embrasures (Pl. LXI. 1). The close spacing common in other epochs had no place in an age when archer-cohorts were rare.

Behind the rampart the *intervallum*, an open space here 26 to 28 feet wide, leaves room for circulation and helps to place the buildings of the fort beyond the range of hand-thrown missiles. This was partly occupied by a lightly metallated road of gravel and shale detritus; but immediately behind the rampart and under its shelter an open strip, varying in width from 6 to 16 feet, was reserved for minor structures, such as ash-pits, ovens and fuel-stacks.

The single ditch surrounding the fort was found in 1936 to be 13 feet wide and 6 feet deep. It is separated from the rampart by a berm about 5 feet wide, while the upcast from it is disposed in a low-spreading mound beyond the defensive system. On the east front of the fort an outer ditch lay 11 feet beyond the inner ditch, and was itself 11 feet wide, but its depth was not tested.

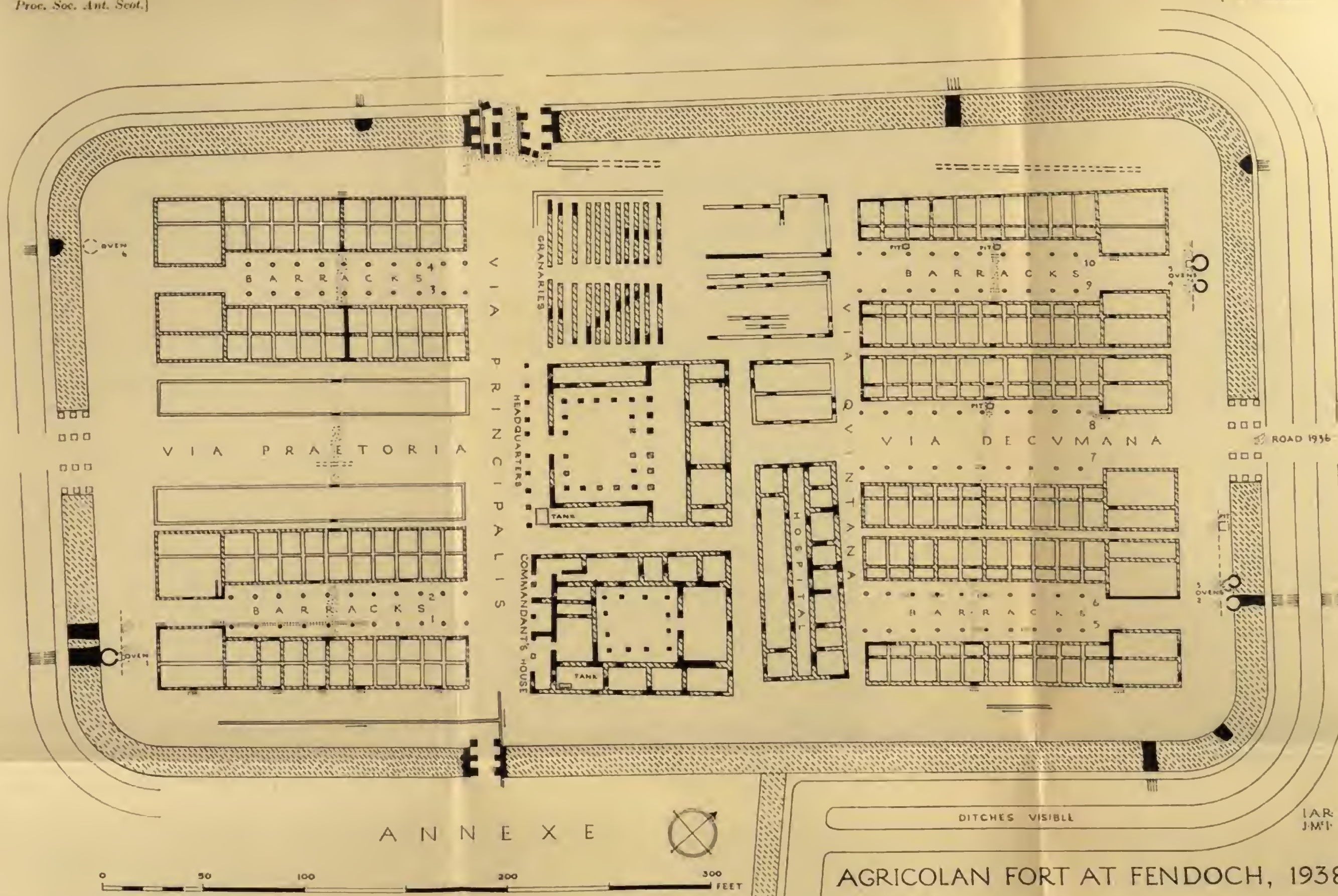
The careful planning of the internal buildings, described below, demanded, but did not receive, an equally careful planning of the defences, which should have been set out four-square, with strictly parallel sides; on the north front a discrepancy develops towards the north-east angle, adding some 18 feet to the over-all length of the east rampart, which measures 338 instead of 320 feet, as at the west. The length of the fort, however, remains constant at 598 feet.

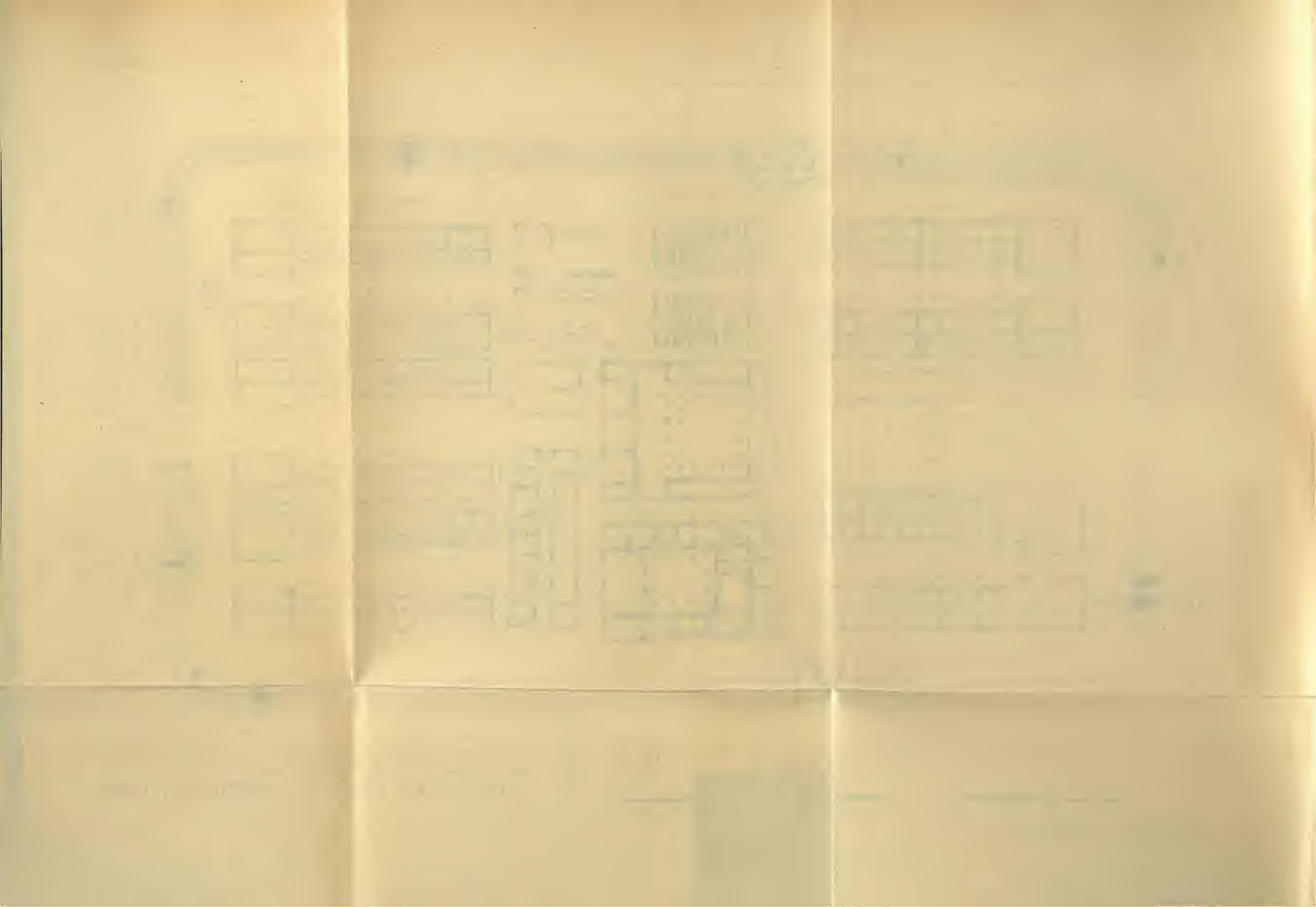
(b) *The annexe* was first observed in 1937 by Mr F. G. Simpson, Hon. F.S.A.Scot., during a brief visit to the site. His practised eye detected a dark line suggestive of a ditch descending the slope towards the Fendoch Burn, at a distance of 215 feet behind the east side of the fort. Further observation revealed surface indications of an upcast mound outside the supposed ditch and a rampart inside it. The existence of these features was promptly verified by trial-holes, which showed that the rampart was of turf, like that of the fort. In 1938 a section across the ditch established that it had been V-shaped, $8\frac{1}{2}$ feet deep and 17 feet wide. At 200 feet south of the fort-rampart the ditch is interrupted by a causeway of un-

¹ *PBSR*, xiii. 5, 10; Cichorius, *Die Reliefs der Traianssäule* (hereinafter referred to as Cichorius), sc. xii. xx. etc.

² Corder and Romans, *Excavations at the Roman town at Brough-Petuaria*, 1937, 17-25.

³ Cichorius, sc. cxxxiv.





disturbed subsoil, 12 feet wide. This is occupied by a lightly-metalled disused road, which must, nevertheless, be relatively modern, for it is laid down on top of a thick layer of humus, well above the Roman level; it is marked as a footpath upon the 25-inch Ordnance Survey Map of 1900 (fig. 1), and those who constructed it no doubt took advantage of the gap in the Roman defences.

The east defences of the annexe, thus defined, continue towards the edge of the natural terrace above the Fendoch Burn. Before reaching the brink of the declivity, they curve westwards, but are almost immediately lost to sight, owing to an erosion by the stream. Further west, the relatively flat ground, which the defences were designed to contain, terminates in bold, steep hummocks. Hereabouts, then, the defences might be expected to return towards those of the fort. There is, however, no surface indication of their existence, nor was any ditch revealed by trial-holes on the neck of land linking the south-west angle of the fort with the hummocks. It is not likely that this side of the annexe was left wholly unfenced; but the rough ground and the stream and marsh beyond it certainly rendered elaborate defences far less necessary. A minor feature may thus have taken their place, slipping through our line of trial-holes.

Inside the annexe numerous trial-holes were cut on the flat ground by Messrs C. M. H. Millar, Carter, and Hall, and their pupils, from Trinity College, Glenalmond. These revealed no structural remains, but one hole produced traces of burning and some shapeless lumps of iron (see p. 148).

(c) *The Gateways*.—*The east gate*, at Fendoch the *porta decumana*, was located in 1936, by discovering the cobbled road which passed through it. In 1938 field observation discerned that this roadway occupied a central position in a low 40-foot gap, of the same width as the north gate. It was thus possible to assume that the planning of these gateways had been very similar, and no further excavation seemed called for. *The west gate*, or *porta praetoria*, lies below the ruins of Easter Fendoch, and is not likely to have been less large than the opposite and less important decuman gate. An excavation here would have involved heavy work in clearing the upper ruins, with the attendant probability that the farmstead had seriously damaged the Roman structure.

The pattern to which the east and west gates probably conformed is thus provided by *the north gate*, the *porta principalis dextra*. This was uncovered in 1938. It has (fig. 3) a frontage of about 36 feet, of which approximately 25 feet are occupied by towers and 10½ feet by a carriageway. Its depth has been 17 feet. That the dimensions cannot be given accurately is due to the method of building, which was as follows. A secure anchorage for the structure was prepared by digging exceptionally large rectangular pits (Pl. LIII) to hold the main uprights. When these uprights had been placed in position and braced together the pits were

packed with rammed gravel and sand. Two drainage gullies (Pl. LIII, 1) were next cut, each actually in the packing of three post-holes. When the fort was disused and the posts had been withdrawn, provided that the rammed packing surrounding them had not collapsed, a pure greyish-purple silt from the adjacent turf rampart filled the holes which they had occupied. Thus, the post-holes impressed in the packing (Pl. LV, 1) are to

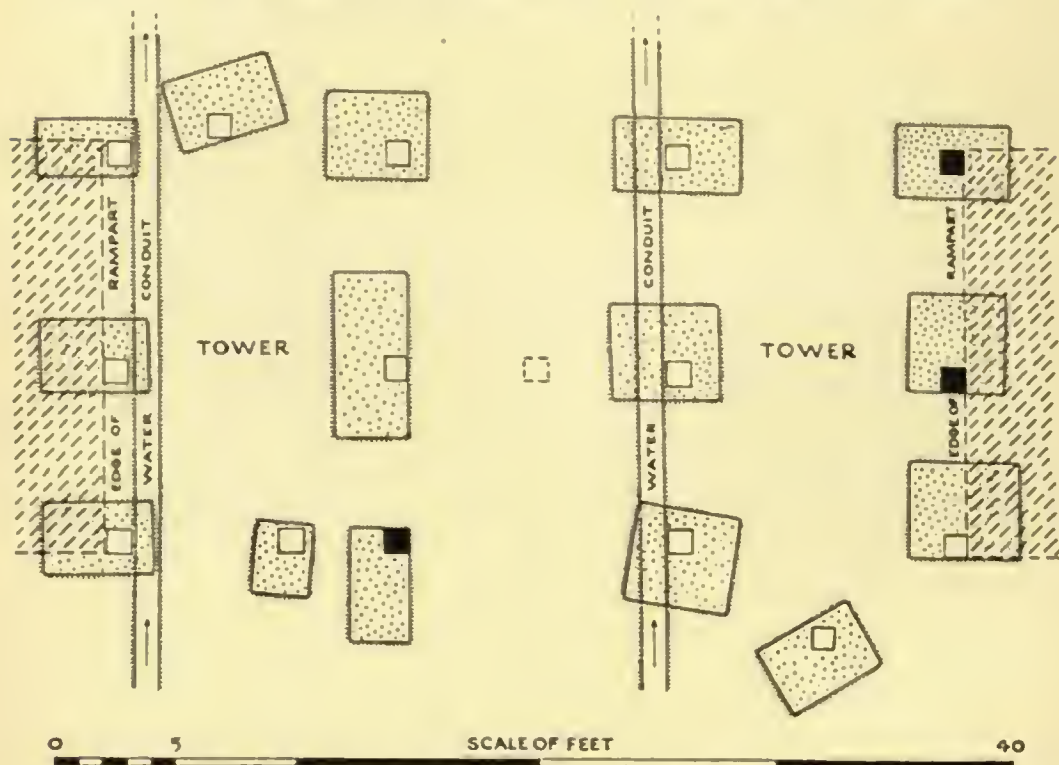


Fig. 3. North Gate at Fendoch. The outside of the gate is at the top.

be distinguished from the pits dug to receive both packing and posts; and while the pits were not difficult to discover, it was not always that the impresses of the posts had survived or attracted notice. The method employed may be compared with that used to set the great posts of the gateways in the sandy soil of Haltern¹ or Xanten.² At Xanten, the stone bed-plate upon which the bottom of the post had rested was often the only indication of the actual dimensions of the timber, but impresses also survived in the filling. Fendoch, like Haltern, produced no bed-plate, for

¹ *Mitteilungen der Altertumskommission für Westfalen*, v., 24, fig. 6.

² *Vetera (Römisch-Germanische Forschungen, iv.)*, 35-36, figs. 24-28; cf. *ibid.*, pp. 62-63, for rather similar sockets from the houses of tribunes.

the gravel subsoil was reckoned so much firmer than sand. Thus, the impress of the post was the only clue to the exact position and size of the structure.

The pits indicate that the general plan of the gateway was a single passage-way between two towers. Neither tower had been erected on top of the turf rampart; for the fallen turfwork did not come into view until the east and west lines of pits were encountered, and several courses of standing turfwork became visible when the outermost limits of the pits had been reached. Thus, the rampart had evidently been laid up against boarding held between it and the posts which the pits contained. It follows from this conclusion that the fronts of the towers were not the open frameworks illustrated so frequently among the semi-permanent fortifications¹ of Trajan's Dacian campaigns (Pl. LXI, 2), but weather-boarded structures of more solid type.

In detail, the dimensions of the towers may be calculated as follows. Those of the east tower are fixed to east and north by two post-holes, and to west by the gully which crosses the pits so as to leave only limited space available for posts. A south limit is fixed by the relation of the southward lateral pits to the surviving south-east post-hole of the west tower. This results in a $12\frac{1}{2}$ -foot frontage and a depth of 17 feet. The arrangement does not include an irregularly-placed pit behind the tower, of which something will be said at a later stage (p. 118). The west tower is delimited on east and south by the post-hole in the south-east corner, to north by the front of the east tower, and to west by the gully crossing the filled pits. These conditions comfortably permit a $12\frac{1}{2}$ -foot frontage and a 17-foot depth matching those of the east tower. The passage between the two towers is $10\frac{1}{2}$ feet wide. The main uprights of the towers, as the three surviving impresses agree in showing, were one foot square in section, and it may be assumed that if the rampart rose to a height of some twelve feet the towers were not less than 28 feet high, allowing for a ten-foot upper storey and a six-foot crenellated top. An iron spike, $7\frac{3}{4}$ inches long and $\frac{5}{8}$ inch square in thickest section, and thus commensurate with the massive timbers attested, was found in the east tower (Pl. LX, 2).

Some differences between the towers may now be noted. The west tower was floored (Pl. LIII, 2) with packed gravel at least a foot thick, laid directly upon the subsoil and carrying a thin occupation-level of trampled dirt and ash. The east tower (Pl. LIV, 1) exhibited no such layer: only dark and thickly silted humus, washed down from the adjacent rampart, covered the subsoil. It seems evident, therefore, that while the basement of the west tower had been in use, presumably as a guard-chamber, the eastern tower had been closed. This difference no doubt accounts for a variation in construction. While the closed basement could be cross-

¹ *Cicchorius*, *sc.* xv, xxxi, cxxxiv, etc.; cf. *PBSR*, xiii, 27-28.

braced internally, the open basement had to be free of such entanglements. Accordingly, an external upright has been set in a large pit at the front of the west tower, while a smaller pit at the back (fig. 3) has held a framing-post for the guard-chamber door. The back of the east tower is very differently treated. As already noted, a single large pit, as irregularly placed as the extra pit in front of the west tower, marks the site of a post which cannot have formed part of the main rectangle. It can be explained, however, as reinforcing an external staircase, which could be bracketed to the back of the tower at the main uprights, but might well require the intermediate support such as the post in this position would provide. It would suit a staircase about 3 feet wide.

Two more points in the planning may be noted. The lateral posts of the towers are not set at equal intervals. Eight feet separate them towards the front, 6 feet towards the back. An explanation of the difference is no doubt to be found in the arrangement of the adjacent rampart-walk. A broad turf rampart was built with a sharp front and less steep back. There would thus be room for the whole of the rampart-walk in front of the middle post, and the tower would be entered by a door hung upon this firm support. Secondly, the different interval may also be related to the gangway covering the gateway passage. As in the double gateways¹ of Haltern or Xanten the gangway and doors which it covered would be set well back. The closer relationship of the rearward posts would supply the extra strength there required. No trace of a sill was observed, but search was not made for a door-step: the main part in holding the doors shut must have been taken by great bars held in iron brackets. The space in front of the doors, some 10 feet square, must have been a death-trap into which few would venture and whence fewer would escape.

Finally, the road through the gateway is of gravel, a foot thick, tailing off rapidly beyond the entrance. It is thus much thicker than the inter-vallum road (see above, p. 114). The difference between the two is reconciled by a gradual slope in alternate layers of gravel and turf, four thick at the highest point. Similar ballasting of military roadways has been observed at Cawthorn.²

The ancient aspect of the gateway was no doubt similar to that of the gates of Xanten,³ as restored by Lehmer. But while these gateways had bastions with fronts closely resembling the Fendoch gateways in size, their backs were L-shaped and unlike true towers such as appear at Fendoch. An attempt at restoration (fig. 4) must start, however, from the rampart-walk adjoining the gateway and governing the height of its first floor.

¹ Haltern, *Mitteilungen der Altertumskommission für Westfalen*, v. 24, fig. 6; Xanten, *Vetera*, 33-34, figs. 21-23.

² *Arch. Journ.*, lxxxix. 70.

³ *Vetera*, p. 34, fig. 23.

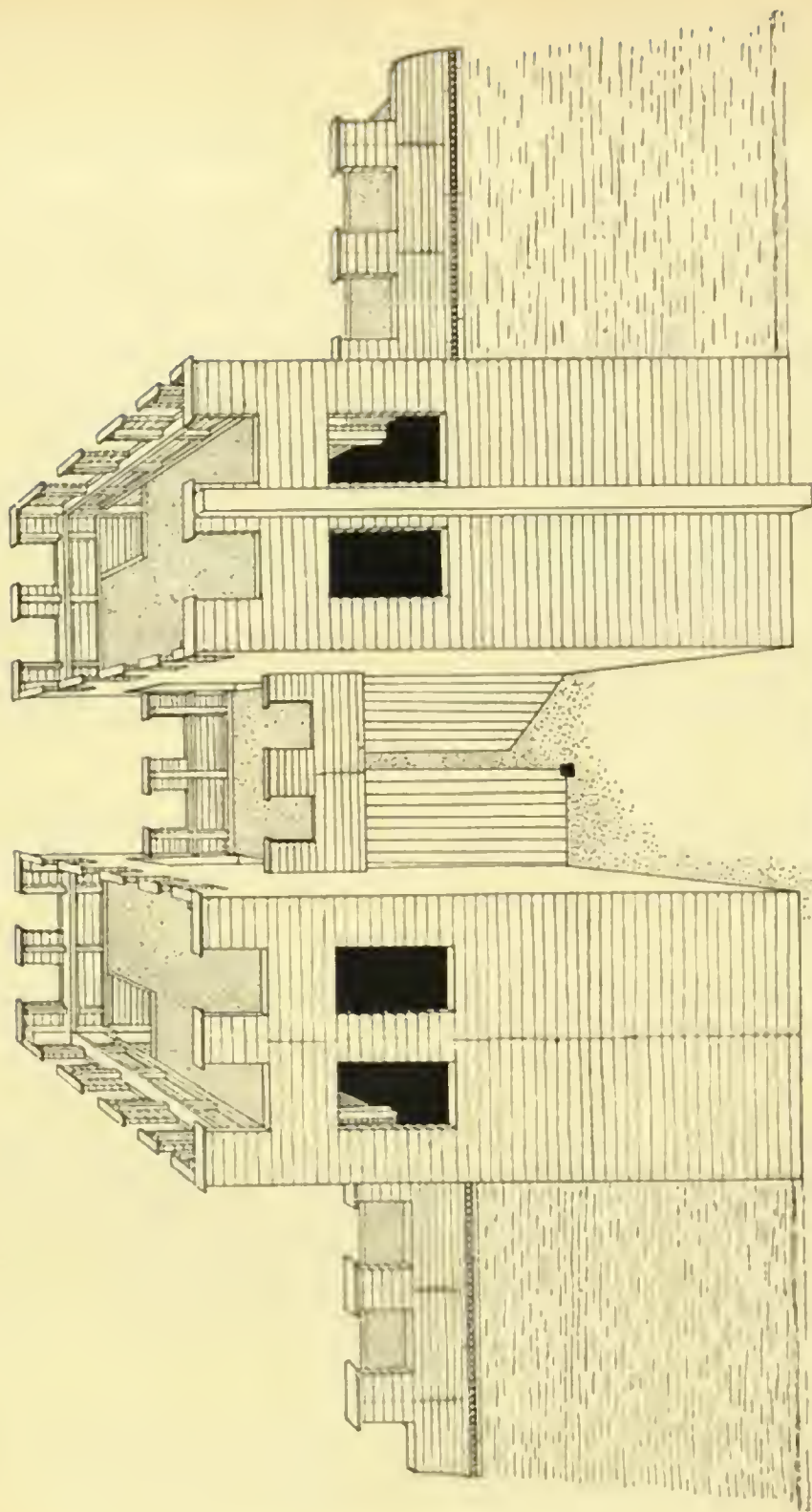


Fig. 4. Conjectural restoration of the North Gate, Fendoch.

This has been calculated at about twelve feet high. It can hardly be an accident that $12\frac{1}{2}$ feet is the dimension of the front of the towers; for timber-work involving cross-bracing is regularly built upon the square. This height is also suitable for the doors of the gateway, which would be hung behind a framework fixed between the rearward main posts of the passage, while the gangway would cross the passage above them. There is no need to suppose that this gangway was roofed: its front would be protected, as is assumed at Xanten,¹ by a parapet and merlons some 6 feet in total height. In its length of $10\frac{1}{2}$ feet one central merlon and two half-merlons to protect the tower-doorways, would suffice. The embrasures between them would thus be about $4\frac{1}{2}$ feet wide; none too large when it is recalled that the Roman soldier of this period appears (Pl. LXI, 1) on Trajan's Column² defending crenellated ramparts shield-in-hand, thus requiring a larger embrasure than was demanded by later custom, employing different weapons and armour.

Beneath the floor-level thus established the basements of the towers were differently treated. The east tower, where the basement, as noted above, was not put to use, required neither door nor window, and to the lower part of its back was applied an external stair. The west tower, where the basement served as a guard-chamber, was entered by a door at the east end of the south side and was probably lighted in addition from a rearward window: for it is unlikely that the front had loop-holes, suited only to weapons of a kind not supplied to the normal auxiliary cohort.

The upper storeys of towers furnished to the semi-permanent works figured upon Trajan's Column³ are open platforms (Pls. LXI, LXII), whence the defenders, protected by their own armour, rained down missiles upon the heads of assailants. A boarded structure, however, would possess at least a parapet to screen its occupants: while the divided front of the west tower creates in effect two windows. These must have been high, for use with spears or *pila muralia*,⁴ and 5-foot windows would probably fit the requirement. Access to this floor-level was probably confined to the stair behind the east tower. The flat roofs of the towers would be reached by ladders from the first floor, and must have had a parapet and merlons, the latter attached to the main uprights.

The south gate of the fort (fig. 5), leading to the annexe, is on that side of the plateau which is least open to attack. It is thus a minor gateway, requiring less elaborate protection. These facts are reflected in the design, which is that adopted for many minor Roman gateways, for example, the milecastles⁵ of Hadrian's Wall. The passage-way

¹ *Loc. cit.*

² *Cichorius*, pl. 24, no. xxxi.

³ *Cf. note 16.*

⁴ *Jahrbuch d. K.D. Inst.*, xxiii, 79 ff; *Castleshaw, Interim Report*, ii, pl. 17.

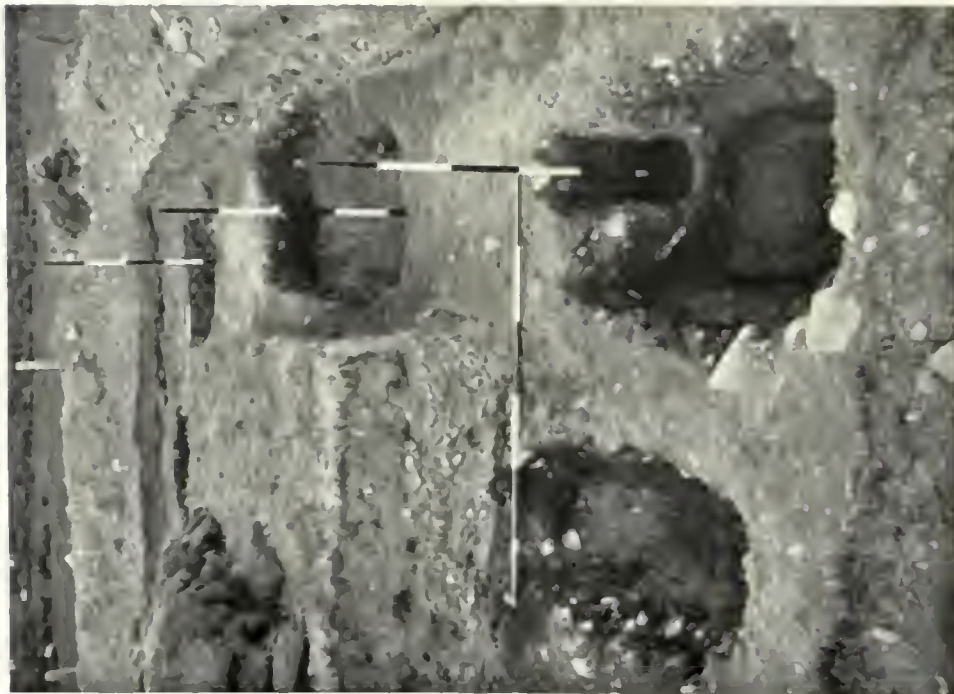
⁵ *AA¹*, viii, 309, for the three types.



1. Roman Fort at Fendoch. General view showing site, on plateau in foreground, and the Sma' Glen in background.



2. Fendoch. Section of rampart showing turfwork (contained between poles). The steep back of the rampart can be seen in section to right of the left-hand pole.



2. Fendloch, north gate. East post-holes of west tower, with impression of post excavated in foremost post-hole. Note floor in section above sapling pole.



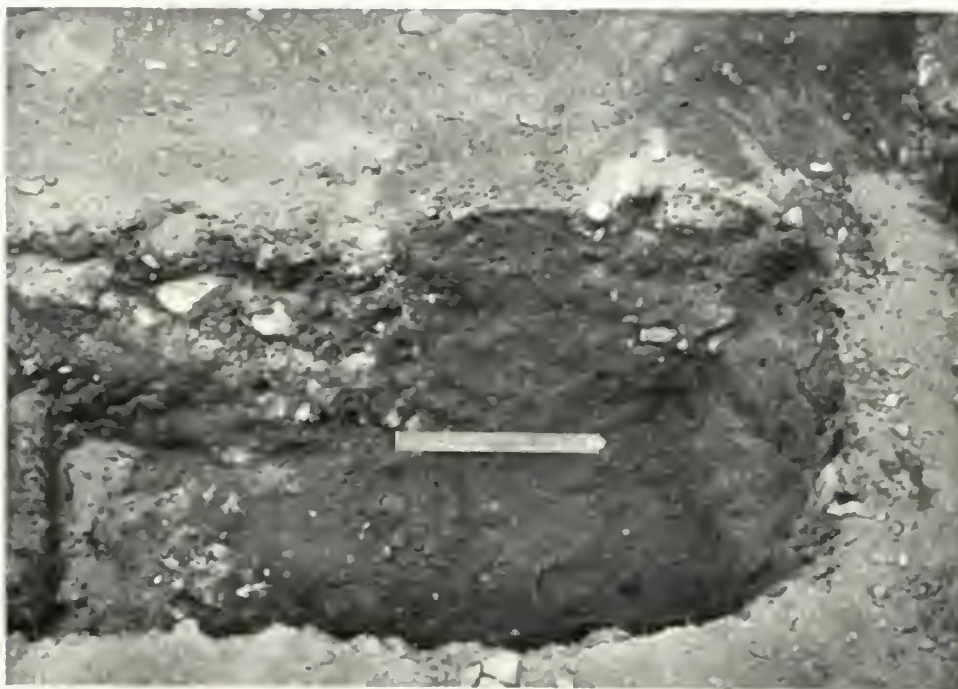
1. Fendloch, north gate. West post-holes of west tower, with water-conduit showing as dark strip to right of poles.



2. Fendloch, south gate. Bed for water-conduit (excavated) and east post-holes of gateway.



1. Fendloch, north gate; east post-holes of east tower, with irregular hole for staircase in foreground. Note absence of floor in section to left of supine pole.



1. Fendoch, north gate. North-east post-hole of east tower, showing impress of post in packing. A foot-rule lies at the foot of the impress.



2. Fendoch, headquarters. North-west corner of front portico, showing foundation-trench.



2. Fendoch. Oven 1, with hob in foreground.



1. Fendoch. Foundation-trenches of the cross-hall in headquarters building looking south.



1. Fendloch. North granary, north-west corner showing caves-drop (in background) and three foundation-trenches with ends cut down and damaged by digging out the timbers on demolition.



2. Fendloch: Oven 3.



2. Fendloch. Barrack 1. Eaves-drop runnel and verandah (in background), and foundation-trenches of front wall and cross-division (in foreground).



1. Fendloch. Barrack 1, north-east corner of N.E.O. quarters, with post-holes of men's verandah beyond (marked by ranging-poles) and eaves-drop runnel to left.



1. Fendoch. Ovens 5 and 4 (in background), first stage.



2. Fendoch. Ovens 5 and 4 (in background); second stage, showing Oven 4 covered with a new base.



1. The auxiliary soldier's sword, Fendoch.



2. Miscellaneous iron objects, Fendoch.



1. Trajan's column: a stone fort with crenellated rampart and towers, defended by men with spears (once supplied in metal) and shields.



2. Trajan's column: a fort with wooden towers in two-storey open framing.



1. Trajan's column: Soldiers' activities with camp (left) and fort (right) in background. The camp exhibits the ends of logs forming a corduroy rampart-walk: the fort has wooden framework towers and wooden internal buildings.



2. Trajan's column: a fort with wooden framework towers, crenellated rampart, and wooden internal buildings. Over the gateway is a tablet for an inscription.

(fig. 5) runs below a single tower, of which the main uprights were held in six large rectangular pits. No impress of an actual timber was noted. Since, however, the pits would contain without difficulty a tower similar to those of the north gate, it may be presumed that the same standard size was used. The tower would then be $12\frac{1}{2}$ feet wide and 17 feet deep.

As at the north gate, a gully (Pl. LIV, 2) made its exit alongside the main posts of the tower. But while the gully at the north gate was so placed as to be accessible for repairs without disturbing the rampart, this one lies on the wrong side of the main uprights and was covered by the tumbled turf of the rampart, visible on both this and the opposite side of the tower. The gully was not lined with stone, nor had wood-work been left in position: yet it is certain that the channel must once have been covered, at this point at least, in order that its contents might pass below the rampart. This point is of significance in a later context (p. 139).

The aspect of this gateway, however, will have differed from the north gate in so far as it combined the tower and gateway-passage which are there distinct structures. The door-frame may be supposed to have been fixed to the outermost uprights, since cover would be offered to assailants by setting it further back, below the tower. The upper storey would occur at rampart-walk height, and would probably have two front windows, flanked by one on each side overlooking the rampart-foot. Since no stair could be supplied at the tower itself, this floor was doubtless reached from the rampart-walk. Hence a ladder would give access to the flat crenellated roof.

Angle-towers are so constant a feature of Roman military architecture, that very careful search for post-holes was made at the south-east angle, on the most vulnerable front. No trace of disturbance of the subsoil was found, though the rampart was standing 3 feet high. It would be rash to conclude from this evidence that no angle-tower existed at Fendoch: but the result was not such as to encourage further search.

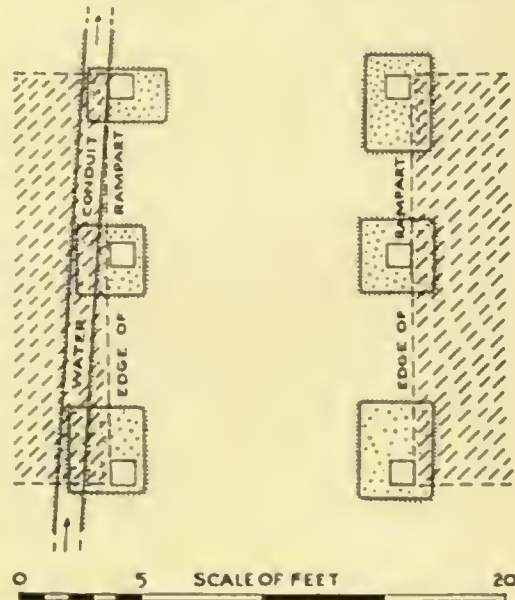


Fig. 5. South Gate at Fendoch. The outside of the gate is at the top.

(iii) INTERNAL BUILDINGS.

(a) *Introductory*.—Before describing the actual buildings, the method of constructing them may be noted. All had been of timber, fixed in the ground by digging in the subsoil vertical-sided trenches wide enough to contain with ease the sills which held the main framing of the buildings. If the plan demanded post-holes rather than sills, a bed for each post was prepared, as at the north gate (p. 115), by digging a large rectangular pit wherein the post was set upright and packed with rammed filling. There is no doubt, however, that the principle of digging the pit much larger than the timber which it was to receive applied also to the trenches for the sills. In all the more elaborate buildings, such as the headquarters, commandant's house, granaries, and hospital, the trenches were not less than 2 feet wide. But the tallest and most massive timbers required on the site and employed to form the main uprights of the gateway-towers, were no more than one Roman foot square, thus setting a limit to the size of beam likely to have been used for the internal buildings. In fact, the posts of the front portico in the headquarters building were 6 inches square (see below). This was probably the scale of the barrack timbers, which had been contained in trenches a foot wide.

Another feature worth note is the general occurrence of shallow runnels, created not by man but by rain-water dripping from the roofs. The gravel subsoil of Fendoch readily absorbed surface moisture, rendering unnecessary the open drains or gutters demanded by the Roman custom¹ of leaving their roofs unprovided with eaves-spouts. Thus, the frequent dripping of water formed a shallow channel in which accumulated some 3 to 4 inches of mud and trampled rubbish. The feature was first recognised at Barrack 1 (Pl. LVIII, 1), on the analogy of a similar runnel observed² at milecastle 50TW on Hadrian's Wall, but examples soon abounded. In these runnels lay much of the pottery found on the site; and it should here be recorded, to avoid further misunderstanding, that the runnel associated with the verandah of Barrack 6, which yielded a fragment (fig. 14) of Dragendorff's Samian shape 29, was in 1936 mistaken for an earlier foundation-trench cut by post-holes (p. 135).

(b) *The headquarters building, or principia*, has (fig. 6) a frontage of 80 feet and a depth of 100 feet, the latter including a front portico 10 feet deep with ten uprights. These posts, though set in pits 2 feet square, were themselves just 6 inches square, as shown by an impress in the packing of the fourth pit from the south. At the south end of the portico there was a rectangular pit, 3 feet deep and 8 feet square, with vertical

¹ Compare the implication of Vitruvius, ii. 8, 18, *proiectura coronarum reiecta extra perpendicularum stillas*.

² CH², xxxv. 226, fig. 9, where the feature is marked by two ranging-poles in the foreground.

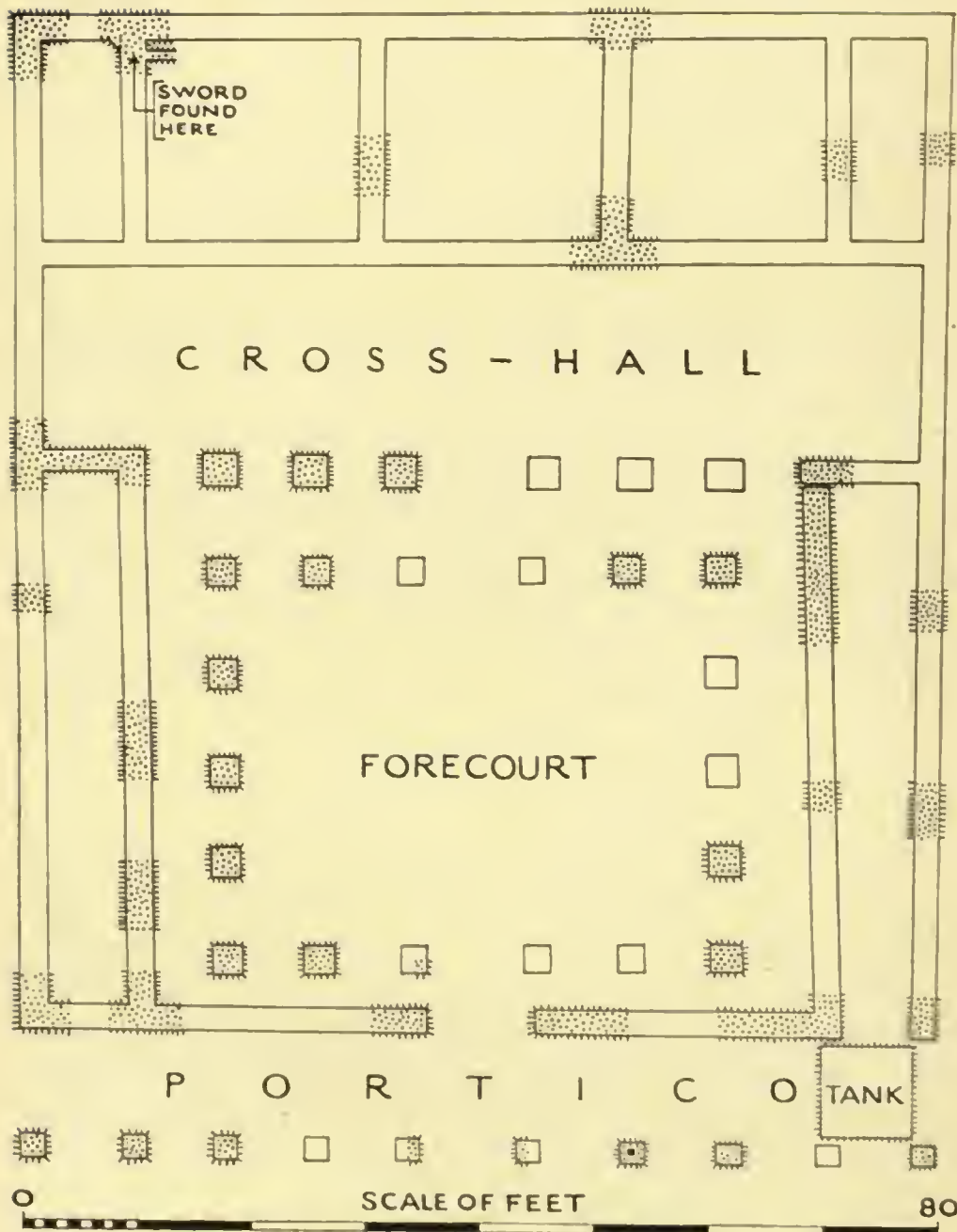


Fig. 6. Headquarters Building at Fendock.

sides, which in the gravel subsoil must have been lined, presumably with timber, as was a similar pit in the commandant's house (p. 129). Again, since the pit blocks not only one bay of the colonnade but also the open entrance to a lateral room beyond it, we may assume that it was at least partly covered with a wooden top. In so public a position, the pit can hardly have served any other purpose than a water-tank, comparable with that which lined half the frontage of the headquarters building at *Bremenium*.¹ Satisfactory evidence that the portico was frequented by the soldiery when at ease was provided by a gaming-counter of cream-yellow glass paste, marked with two drilled dots, found 20 feet north of the tank.

The main entrance to the building was a central doorway, 10 feet wide. This led into the first division, a forecourt 41 feet wide and 31 feet deep, surrounded by a colonnade of six and five posts on the longer and shorter sides respectively, contained in pits 2 feet square. Within the forecourt is normally found a well. At Fendoch, the water-table lies so deep below the fort, that water must have been obtained in some other way. A hint as to the method actually employed is given by the tank already described: later, a pipe-line was discovered and is described below (p. 138 ff.). The forecourt was flanked by long rooms, apparently not subdivided. That on the south was reached through an open entrance from the front portico: the northern room was closed, and the position of its door, or doors, is uncertain, failing superstructure. No clue was obtained as to the purpose of the rooms, but similar accommodation is elsewhere² explained as *armamentaria*, or armouries, a view which the accessibility of the southern room might be thought to favour.

Behind the colonnade of the forecourt and the lateral rooms lay the second division of the building, covering a space 77 feet wide by 17 feet deep. Its frontage of 57 feet is contained (Pl. LV1, 1) between the ends of the lateral rooms and has been carried by six posts, contained in pits 3 feet square, of which three have been recovered, leaving the rest to be inferred. The notable difference in scale of these pits, a foot bigger each way than those of the forecourt, shows that they were intended to hold posts very much larger, supporting a higher structure comparable with the gateway towers. This was the cross-hall, which ran straight across the building, as is shown by the way in which the north wall of the southern lateral room butts against it (fig. 6). In the life of the fort and its district, it was equivalent to the *basilica*, or judgment-hall, in civil *fora*, for which the same plan³ was used; and here the commandant of

¹ AA¹, I. plan facing p. 68; Bruce, *Roman Wall*, edn. 2, p. 452. A wooden trap-door covering a rectangular pit or tank was noted at Haltern, *Mill. d. Allertums-Komm. f. Westfalen*, v. 42-43, figs. 7-8.

² S. N. Miller, *Roman Fort at Balmildy*, p. 21.

³ Cf. *Vetere*, 51, where the parallel with Caerwent is developed; also Ward, *Romano-British Buildings and Earthworks*, pp. 89-91.

the fort held his courts-martial.¹ The recess on the south, formed by the returning end of the lateral room, would accommodate the dais or tribunal for his judgment-seat, the elegant bronze *sella castrensis*² which each commandant possessed.

The third division of the building is formed by the five rooms which lie behind the cross-hall, in conformity with well-known plans.³ The three principal rooms, each some 20 feet square, are flanked by two minor offices, 10 feet wide and 20 feet deep. The central room was the regimental chapel,⁴ where the Emperor's image and the standards of the corps received the veneration inspired by loyalty and discipline. The large rooms to north and south would be used for accounts⁵ and records,⁶ while the smaller rooms take their place as filing-rooms for reserves of information not normally required, and as subsidiary offices. It will be observed that one end of a minor division was uncovered at the back of the room north of the chapel. This may be compared with a division in the centurion's quarters of Barrack 2, but the purpose of both remains obscure. Similar minor divisions in the *principia* at Vetera are explained as cupboard-supports.⁷

The general impression of great precision, so powerfully conveyed by the design of the building, is strongly reinforced by a study of details. This soon reveals that the planning was conceived in units of tens and fives, reflected in the dimensions of the whole building, its rooms and colonnades and the intercolumniations of the cross-hall. The plan is in fact a manifest, drawing-office product, such as the engineers of a *praefectus fabrum* might well have produced. Equally, there is no reason why all the component parts of such a building should not have been made to order and kept in store, ready for use when required. The whole building as here designed could in fact be erected with standard timbers. Such timbers could not have been prepared locally: for a pollen-analysis of the turf from the fort-rampart shows (p. 154) that large timber was not within the horizon of Fendoch. Thus, the material for building would have to be ordered from elsewhere; and whence, if not from the stocks of military saw-yards? The significance of this point will become apparent at a later stage of our report (p. 151).

¹ For police action by a commander, see Hardy, *Pliny's Correspondence with Trajan*, xxix. xxx.

² Cf. Curle, *A Roman Frontier Post*, pp. 286-287, pl. lxl.

³ Cf. J. Ward, *Romano-British Buildings and Earthworks*, fig. 28, p. 83; also Haverfield and Macdonald, *The Roman Occupation of Britain*, fig. 11, pp. 135-138.

⁴ Von Domaszewski, *Die Religion des römischen Heeres*, 11-19; cf. Statius, *Theb.*, x. 176, *domumque venerandam Signorum*; and Tertullian, *Apol.*, 16, *religio Romanorum tota castrensis signa veneratur, signa iurat, signa omnibus deis praeposit.*

⁵ In the hands of the *aetarii*, cf. *CIL*, vii. 458, from Eboraceter, recording an *aetarius* of the *cohorta IIII Br(eucorum)*.

⁶ In the hands of the *cornicularii*, cf. *CIL*, vii. 739, from Greatchester.

⁷ *Vetera*, 50, "würde man . . . die . . . Zwischenmauern als Substructionen für schwere Akten-schränke u. dgl. ansehen."

The aspect of the building (fig. 7) next commands our attention. On the main street a first impression was conveyed by the portico. Its 6-inch posts would suggest the sturdy trim efficiency of the army to which they belonged, and are so frankly utilitarian as to preclude a flat-roofed ornamental structure. Nor is a height greater than 10 feet demanded by the needs of soldiers, even when carrying standards. A pent roof may therefore be assumed at this height, with a ridge 5 feet higher, carried upon the back wall of the portico. The roofing material was probably oak shingles, brought with the rest of the material.¹ If a pent roof is assumed for the portico, it is also appropriate to the lateral rooms, which would receive light from windows placed either in their external walls or in the forecourt, thus obviating a clerestory. The roof of the colonnade in the forecourt would slope in the other direction, giving thus a pleasing and natural roof-line to the forepart of the building. All other arrangements result in waste of material and loss of appearance, without gain in other directions.

The vista in the forecourt was closed by the façade of the cross-hall. Here the main entrance was central and 10 feet wide. But the arrangement of the posts shows that the rest of the façade was open, and minor entrances may thus have faced the lateral colonnades of the courtyard. The function of the openings, however, was rather to admit light, which was much needed not only for the hall itself, but for the rooms behind it. Direct light would, indeed, be cut off by the colonnade of the courtyard, but borrowed light in abundance would stream in through the openings, where grilles or latticed screens would provide the necessary wind-breaks. The main source of direct lighting must have been a clerestory, rising high above the colonnaded forecourt and closing the vista with a patterned line of windows.² The number and size of the windows is governed by the planning of the main uprights, which suggests that there were nine, the central one either larger or differently spaced, emphasising the axis of the building with a touch of variation. It may be regarded as certain that these windows were glazed, to prevent wind from lifting the great roof of the hall.

The height of the hall and the arrangement of its roofing is governed by the treatment of the rooms behind it. In many *principia*, as, for example, Chesters³ or Housesteads,⁴ the hall is so related to these rooms as to suggest that they were covered with pent roofs, like side-chapels in a nave. In almost every respect, this design would appear to be much

¹ Tiles can hardly have left no trace upon the site, while the cutting of the large timbers would provide abundant material for shingles.

² Much window-glass came from the headquarters at Balmuildy, *Balmuildy*, p. 26; for windows themselves, see *Romano-British Buildings and Earthworks*, pp. 271-272; a *speculararius*, or glazier, counted among *immunes* in the army, *Cod. Theod.*, xiii. 4, 2.

³ *PSAN*, iv. 137.

⁴ *AA*, xxv. 210, pl. xv.

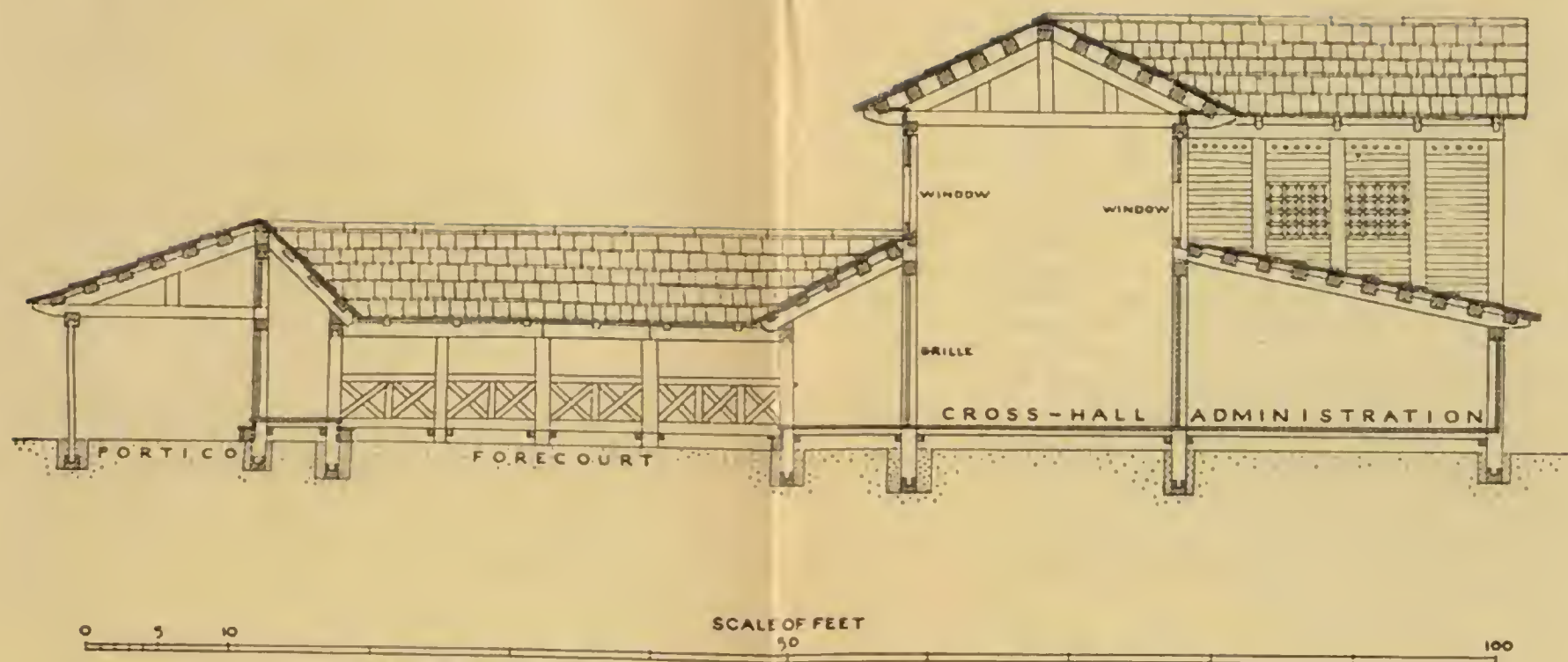


Fig. 7. Conjectural Cross-section of Headquarters Building, Pendoeh, from front (left) to back (right).

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the most reasonable for the Fendoch building, resulting in a hall 25 feet high to the roof ridge, with wooden walls 20 feet high. There is, however, one point at which such a scheme seems to fall below the dignity of the ceremonial occasions which enlivened the routine of Roman military life. The decorative standards and Imperial image were kept in the axial chapel, or *sacellum*, of which a glimpse could be obtained from the very front of the building. These revered objects, no doubt raised¹ upon a stand or dais, not only exact more head-room than the 10 feet sufficient elsewhere, but also require cross-lighting to save them from dark obscurity. This would be provided by raising the roof-line of the chapel to the level of the cross-hall roof out of which it would open like the transept of a church. The greater height of this principal feature of the building has sometimes, as at Munrills,² been deduced from the extra solidity of its foundations. Here no deduction can be made from the size of the foundation-trenches, which are everywhere very wide, and the question depends upon proportion and seemliness.

(c) *The commandant's house, or prætorium*, is placed upon the sunniest side of the fort, which is also least exposed to the enemy. It has (fig. 8) a frontage of 68 feet and a depth of 100 feet, matching that of the *principia*. Its front thus lies parallel with the portico of the latter building, but its arrangement is less public in character, suiting the function of the *prætorium* as the private house of a public personage. It is divided into three columned vestibules of unequal size. The south vestibule gave open access to a large hall, the second biggest room in the house, which may be regarded as a reception-room for delegates, official messengers, despatch riders and all who maintained connection between the outer world and the commandant in his non-judicial capacity. Entry from the house to this hall was probably not direct: complete privacy would be ensured for the household by using for this purpose the lobby to north. This passage was served by the central vestibule and is thus marked as the main entrance to the house, doubtless closed by doors at each end. The north vestibule even more evidently leads to the north wing of the house by means of an open screened passage. It is comprehensible as a service-entrance, by which orderlies, sutlers and the like maintained contact with the servants' quarters of the house. In addition, it serves a small room in the south-west corner of the courtyard, suitable in size and position³ for a latrine. Where no sewer was provided, the sanitary service⁴ formed in the Roman army a fatigue, for the performance of which the service-vestibule is the most appropriate means of approach.

The central feature of the house proper was an oblong open court,

¹ Cf. Tac, *Hist.*, i. 30, in *suggestu in quo paulo ante aurea Galbae statua fuerat, medium inter signa Othonem vexillis circumdarent.* ² *Proceedings*, lxiii. 427-428. ³ *AA.*, xv. 247, fig. 5, 245.

⁴ For the duty *ad stercus*, see Lasquier, *L'armée romaine d'Égypte*, p. 141.

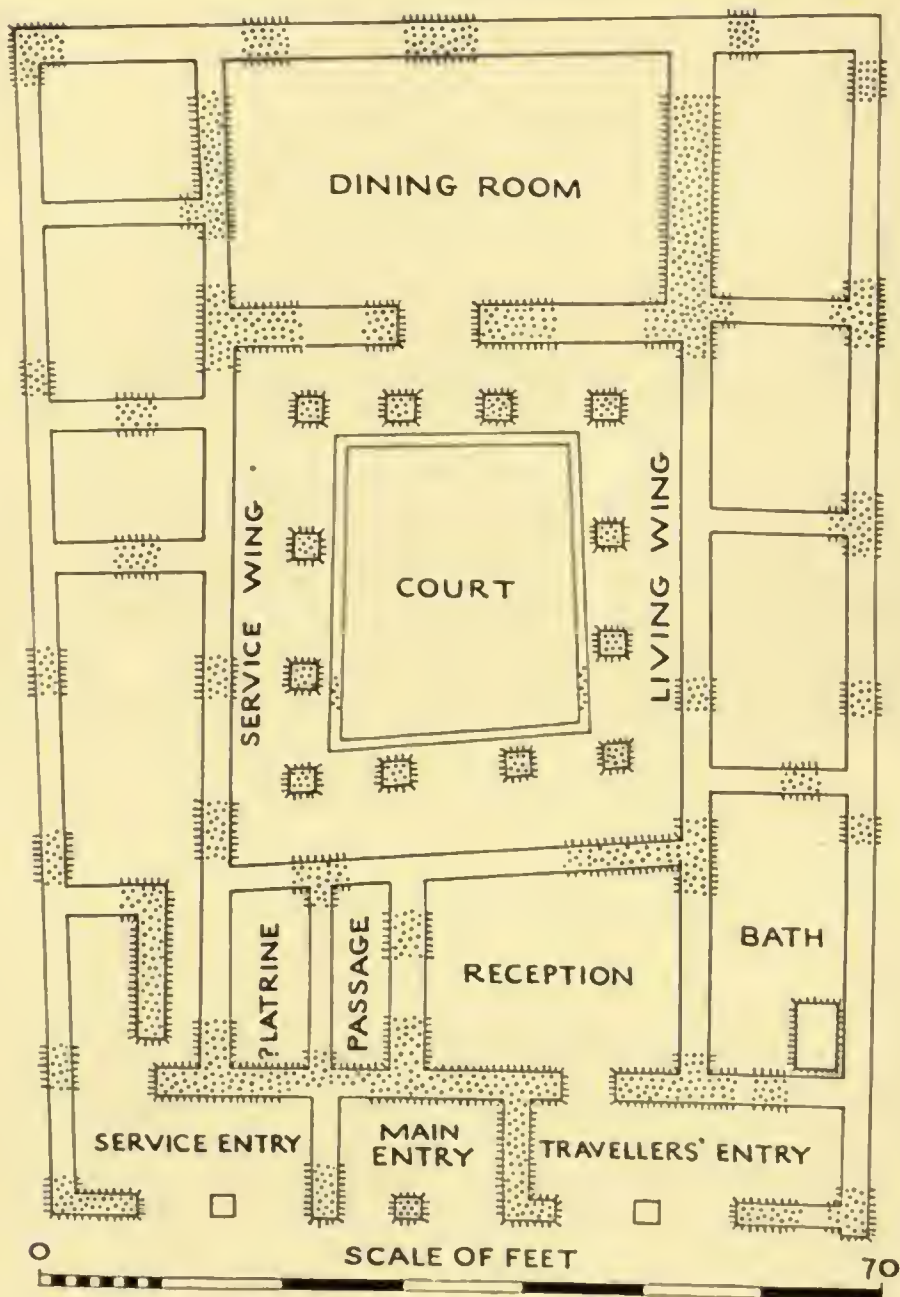


Fig. 8. The Commandant's House, Fendoch.

or light-well, 24 feet wide by 29 feet deep, surrounded by an open covered walk, from which every room could be reached. Apart from the obvious advantages of lighting and circulation thus obtained, the open space afforded a charming oasis of domestic peace amid the clangour of military life. The east end of the court was occupied by a great dining-room, the scene of the evening meal which in the Roman family was the social event of the day. Here the commandant would dine with his staff,¹ sometimes filling the *triclinium* with guests from a neighbouring fort or even with Romanizing British notables, amid a display of silver plate and rich table furnishings, so often forbidden² to officers on campaign but certainly available in their permanent quarters.

Since most of the north wing was evidently occupied by service quarters, while the west wing chiefly comprises reception-rooms, the south wing is left for more intimate rooms, such as bedroom and bathroom. There is no trace of the elaborate heated rooms built in stone, which often form³ part of a commandant's house. But the hint of a water-supply is conveyed by a rectangular tank, 4 feet deep, 7 feet long, and 4 feet wide, in the south-west corner of the front room of the south wing. It had vertical sides once lined with wood, as was indicated by small nails in horizontal rows⁴ sticking at regular intervals to the side. Recreation had its place here, for a second gaming counter, of plain white glass paste, was found in the tank.

The aspect of this timber house no doubt harmonised with that of the *principia*. Its general plan, however, powerfully reflects the Mediterranean design employed by the Roman army for its commandant's houses. Thus, few windows may be expected on the exterior façade, and the rooms would receive their light from the *cortile* round which they were built. This involves the assumption that they were carried up some 15 feet to ceiling level, with a roof-ridge 5 feet higher. The front vestibules, however, would hardly be included in the main roofing scheme, but would receive a pent roof, resembling that of the adjacent portico of the headquarters. The separation of the central vestibule, and its major importance in relation to the plan might be reflected by a different treatment, verging upon the ornamental. This would be most likely to take the form of a gabled porch, formed as a pediment in classic style.

(d) *The granaries, or horrea*, occupy the northern flank of the headquarters, being planned as a pair running east and west and separated by a 10-foot alley. Each is 56 feet long and 30 feet wide (fig. 9). In

¹ In a military cohort this would include the *medicus*, see Cheesman, *Auxilia*, 44.

² Cf. Caes., *B.C.*, iii. 95, *magnum argenti pondus expositum*.

³ Cf. Mumrills, *Proceedings*, lxiii. 434-447, where a wooden house was succeeded by a stone one. No trace of furnace-heating was found in the wooden buildings, as here.

⁴ I should not have observed these had my attention not been drawn to them by M. H. Garrow, who was working on this trench. An upholsterer by trade, he had an exceptionally keen eye for minute detail.

stone granaries' the most characteristic features are buttresses and ventilators. Wooden buildings require no buttress, because strains in a timber structure are taken by cross-bracing. On the other hand, well-ventilated flooring is even more important than in the stone buildings,

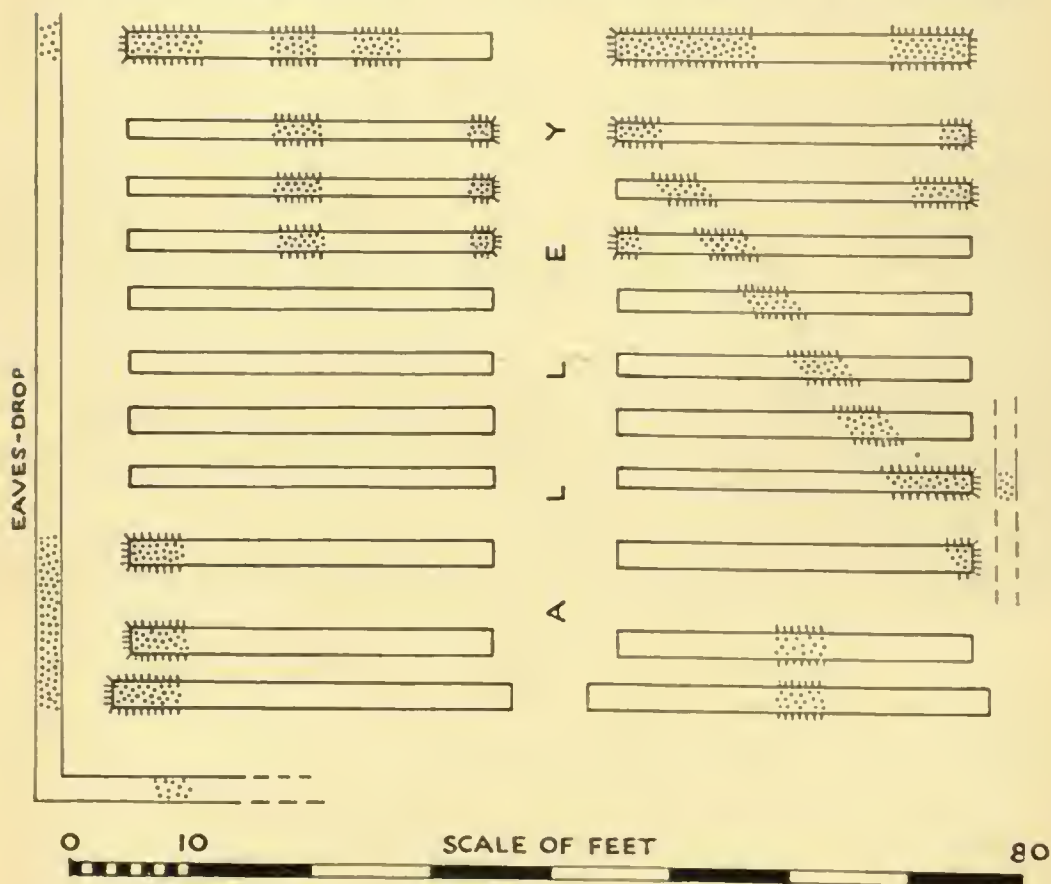


Fig. 9. The Granaries, Fendoch.

because of the greater liability of a timber building to overheat. Thus, the floors are carried upon eleven cross-beams, at intervals of 3 to 5 feet, allowing plentiful space for the free circulation of air. So simple a form of building is not normally employed in the ventilation of stone granaries: but those of the Trajanic fort of Gellygaer,² erected at a time when

¹ J. Ward, *Romano-British Buildings and Earthworks*, fig. 31, pp. 91, 91.

² *Roman fort of Gellygaer*, 101, general plan, buildings, v. viii.; cf. *Romano-British Buildings and Earthworks*, 91, fig. 31, and Haverfield and Macdonald, *The Roman Occupation of Britain*, fig. 16, pp. 144-145.

timber forts were being rebuilt in stone throughout the province, present an interesting hybrid between this type and the normal stone building. Wooden storehouses, indeed, persisted later, as at Old Kilpatrick,¹ where building ix. is built to a pattern in use at Haltern² and Richborough.³

It will be observed that the granaries are set back 10 feet from the line of the headquarters and commandant's house. This might suggest that they also had been provided with porticoes or porches. But the contrary is suggested by the position of the roof-drippings from the building, which turn the corner in association with the ascertained front line. Extra space on the street would, however, be required for turning and backing the corn-waggons into position when stocking the buildings, while steps or a loading-platform would also demand room.

The external aspect of these buildings would depend much upon the arrangement of the interior. In stone granaries, the provision of buttresses denotes that pressure was expected to bear upon the side walls, against which the grain is assumed⁴ to have been stacked in lateral bins. In the wooden building the function of the buttress would be fulfilled by a brace or tie, which at once suggests the division of bins into compartments. Thus, while the plan cannot be said to force a design of superstructure upon us, it nevertheless powerfully suggests the main lines of an arrangement (fig. 10) as follows. The whole building is planned in units of fives and tens. Its width of 30 feet suggests a central passage 10 feet wide, with bins on each side also 10 feet wide. A gabled roof is attested by the mark of its drips, and this would be supported by posts not central but set in two rows so as to form also the corner posts of the bins. While on the exterior of the building these uprights presumably occurred at every 5 feet, there is no reason to postulate more than a 10-foot interval on the internal division, thus allowing five bins to each side, or ten per granary. The effect would be that each of the ten centuries in the garrison would thus have one bin in each building. There is no doubt that the accommodation thus supplied would be ample. Assuming that the bins were filled 5 feet high, 370 cubic yards of storage-room would be available. A year's corn-ration for one man is calculated by Collingwood⁵ to take up half a cubic yard. Thus, it is evident that ten centuries would here possess almost a year's supply. An increase of 6 inches in height would even provide a reserve. Nevertheless, the 5-foot unit would suggest a bin 5 feet high at the back at least, with a wall rising 5 feet more above it, the upper space being occupied by carefully weather-proofed double louvres, to give the abundant circulation of fresh

¹ S. N. Miller, *The Roman Fort at Old Kilpatrick*, building, ix. 22.

² Haltern granary.

³ Richborough granaries, *JRS*, xxiii. 210, pl. xxv.

⁴ *CW*², xx. 130.

⁵ *Loc. cit.* The basis of calculation is 50 feet (internal length of granaries, excluding divisions) multiplied by 10 feet (width of bin), by 5 feet (height of bin), by 2 (double row) by 2 (pair of granaries) = 10,000 cu. feet = 370 cu. yards (approx.).

air which a building of the type would require. The wide overhang of the roof is also explained by the desire to afford a maximum of shelter and shade to a building whose contents were so sensitive¹ to heat and damp. Light would be admitted partly by the louvres, partly by windows at the ends of the gangway and much by the opening of the doors when access was obtained to the building. It is the presence of these doors,

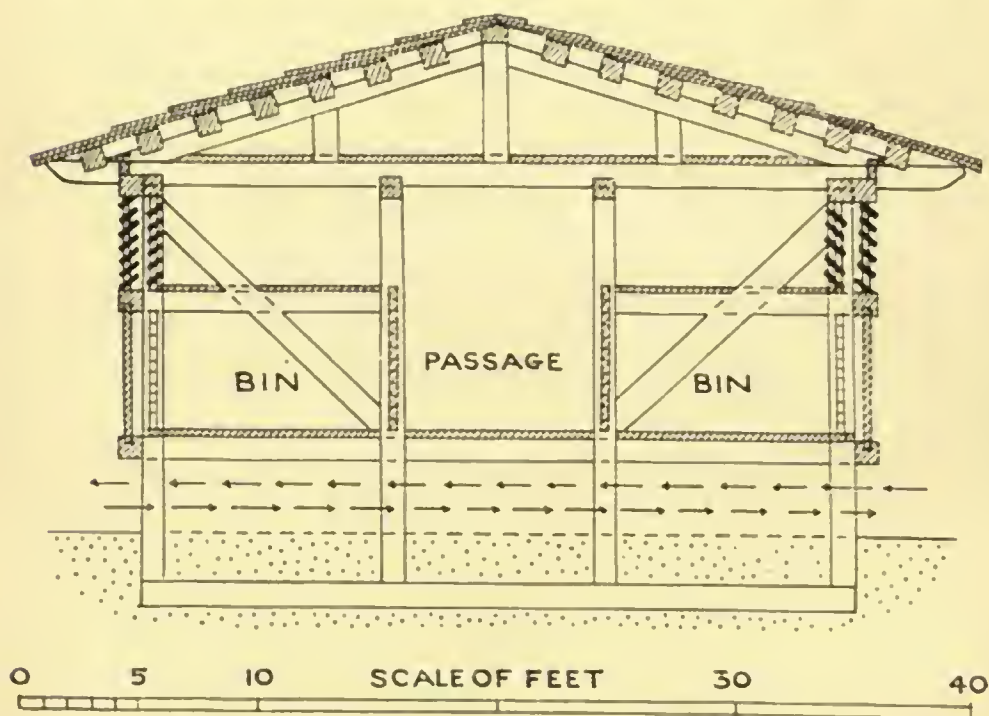


Fig. 10. Conjectural restoration of a section of a Granary, Fendoch.

breaking the continuous wall-space, which seems to have dictated that the front walls should project beyond the rest, no doubt so as to lap cross-beams and uprights firmly at the angles.

(e) *The Hospital*.—A position of relative seclusion, comparable with that chosen for the commandant's house (p. 127) was selected also for a second building (fig. 11), 40 feet wide and 106 feet long; which occupies, behind the commandant's house and the south half of the headquarters building, the space between *intervallum* and *via decumana*. The building consists of three divisions, forming two sets of rooms 15 feet wide, served

¹ Modern millers' practice, as I have learnt by inquiry from Messrs Spillers, of Newcastle-upon-Tyne, is not to allow a heat above 80 degrees Fahrenheit.

by a long central corridor 10 feet wide. Its size and plan show it to be important, yet different from such buildings as barracks (p. 134), stores (p. 136), or stables,¹ with which its length qualifies it to compare. The principal feature of the plan is the self-contained privacy afforded by the central corridor, with direct external access only at either end. If, however, allowance is made for the difference in scale between Fendoch fort and a legionary fortress, it compares very closely with the plan regularly adopted in the fortresses for the wards of the great military hospitals, or *valetudinaria*, as at Haltern, Vetera, Novesium, Lutschitz, and Carnuntum, recently discussed² by R. Schultze. These very large hospitals are ranged about quadrangles; on three sides of which lie wards planned as a series of side-rooms opening on to a wide axial corridor, while the fourth side is occupied by a great reception-hall for preliminary examination of cases. The quadrangular plan with simple side-wards is echoed at Housesteads, in the building behind the headquarters identified as

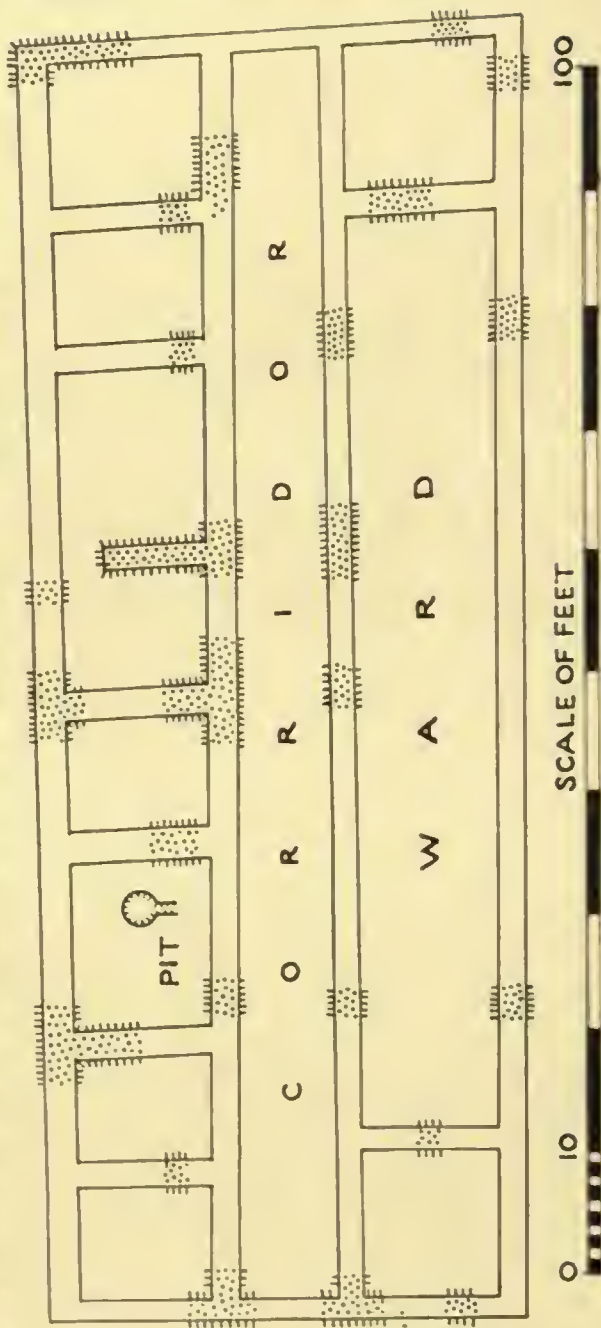


Fig. 11. The Hospital, Fendoch.

¹ A.A.⁴, xiv, 103, fig. 5, 104-107.

² *Bonner Jahrbücher*, 1934, cxxxix, 54-63, pls. I.-V.

a hospital¹ by Stuart Jones. At Fendoech, a quadrangle would have occupied too much space, and the plan adopted is of a ward with eight side-rooms to east and a reception-hall, or ward, on the west, flanked by rooms for administration. The administration may, indeed, have encroached upon the eastern rooms, but too little is known of arrangements or requirements to particularise further.

The aspect of the building no doubt closely resembled that of the single ward in the larger continental hospitals. The side-rooms themselves would be lighted with high windows precluding a view into or from the building. The central corridor would carry a clerestory, lighting and ventilating the whole.

(f) *The barracks* of the fort were not completely excavated, but subjected to an examination sufficient to establish their number and plan. Barracks 1, 2, 3, and 4 lay in the *praetentura*, grouped in pairs next to the north and south ramparts. Barracks 5, 6, 7, 8, 9 and 10 occupied the whole of the *retentura*, three on either side of the *via decumana*.

Barrack 1 (fig. 2) was the most thoroughly examined. It had been 154 feet long by 32 feet wide. The whole width of the building had been occupied for 34 feet by centurion's quarters (Pl. LVIII, 1), the remaining 120 feet being devoted to 10 mess-units (*contubernia*), 26 feet deep, fronted by a 6-foot verandah. Nine of these rooms were uniform in size; the tenth, adjoining the centurion's quarters, was larger. A cross-division was examined (Pl. LVIII, 2) opposite the fifth verandah-post from the west, and it may be assumed that these posts fell opposite the dividing walls between each room. The runnels formed by drippings show that the building had possessed a gabled roof. The longitudinal partition, dividing the *contubernia* into vestibules for kit and inner rooms for living-quarters, is to be inferred from the other barracks, soon to be described.

In Barrack 2 the projecting corner of the centurion's quarters, two points on the front wall and one on the back wall were located, giving a building matching Barrack 1, and divided from it by a street 12 feet wide, on to which both verandahs fronted. It was noted that the centurion's quarters had a minor division $3\frac{1}{2}$ feet west of the projecting corner.

Barrack 3 lies north of the *via praetoria*, in the same relative position as Barrack 2. With unexpected good fortune the trial-trench disclosed not only the main long walls of the building, but a complete cross-division with central partition. The dimensions here and in Barrack 4, where a cross-division and longitudinal walls were also found, so evidently corresponded to those of Barrack 1 and 2, that no time was spent in locating the centurion's quarters.

In the *retentura*, the rain-water runnel and front wall of Barrack 5 had been discovered,² but not recognised, in 1936. Two years later, when the

¹ *Companion to Roman History*, p. 255.

² *Proceedings*, lxx. 404; and pl. ii. 406.

systematic examination had reached this part of the fort, trenching located a verandah post-hole, the front wall, vestibule wall and back wall of the building, which were traced again in detail at the west end. In the centurion's quarters the north, south, and east walls, projecting corner and cross-division, were all identified. The length of the building was thus established at 154 feet, exactly matching Barrack 1, while the centurion's block is 35 feet long. The width of the barrack is, however, reduced to 28 feet, with the effect that the vestibules of the *contubernia* are considerably smaller than in the western group. This is the only point at which the narrowness of the site affects the plan adversely: in order to accommodate six barracks in the *retectura* the men's quarters have been made appreciably less roomy than those farther west.

Barrack 6 was also discovered¹ in 1936, when the south wall of the centurion's quarters, together with three post-holes and the rain-water runnel of the verandah, were first observed without being understood (see p. 122). In 1938 the front wall, vestibule wall, and back wall of the men's quarters were added; and also the south angles and back wall of the centurion's room. The building substantially resembles Barrack 5, facing it across a 14-foot street.

Barrack 7, lining the south side of the *via decumana*, lies back to back with Barrack 6, separated from it by an alley 4 feet wide. The back wall, vestibule wall, front wall, west wall, and a verandah post-hole were located in the men's quarters. In the centurion's quarters the back wall and cross-division were found, but the trench for the front wall had been dug in a belt of soft sand and could not be recognised; its position follows, however, from that of the verandah, already described.

Across the 28-foot *via decumana* Barrack 8 was found in good order. The west end of the men's quarters, with west wall, corners, and vestibule wall, was almost entirely uncovered. The same walls were observed once more in the position assigned to the sixth *contubernium* from the west. In the verandah the rain-water runnel was noted and also a pit, the latter being comparable with two pits found in the verandah of Barrack 10 and unproductive of relics. In the centurion's quarters the projecting corner, with rain-water runnel curving round it as in Barrack 1, a cross-division and the back wall were observed.

Barrack 9 lies back to back with Barrack 8, divided from it by a 4-foot alley, and faces Barrack 10 across a 16-foot street. The west end was here also uncovered, revealing men's quarters with vestibule, while the medial cross-trench picked up their continuation, together with the rain-water runnel of the verandah. The back wall, cross-division, and projecting corner of the centurion's quarters exactly matched those of Barrack 8.

¹ *Proceedings*, lxx. 4041 and pl. II. 406.

Finally, in Barrack 10, the whole west end, with vestibules and three men's rooms, was bared, in order to confirm the 12-foot spacing of the *contubernia*. Front wall, vestibule wall, and back wall were identified in the position of the sixth room from the west, together with the rain-water runnel of the verandah. As already mentioned, two pits were found in the verandah. They yielded neither relics nor ashes, and may have been intended to contain an *amphora*¹ for the water supply of the mess-unit. The front wall of the centurion's room, with rain-water runnel, was identified; but the other walls had been founded in soft sand, as in Barrack 7, and the trenches for them had collapsed. It may be observed that this barrack was not quite symmetrically planned. The back wall is not parallel with the front, but has been attracted, to use a grammarian's term, so as to decline towards the north rampart, 34 feet way from it. Had the line of the rampart itself been quite correctly set out, the error of which it is the source would not have occurred. The mistake is, however, particularly interesting, as showing how the trenches for the wooden sills were laid out before the timber itself was assembled. Had the assemblage taken place and the building been partly erected, the mistake could not have occurred.

The aspect of these ten remarkably uniform buildings was very simple. As the disposition of their rain-water runnels shows, they had gabled roofs, which would cover the whole building, including the verandah. How the men's rooms were lighted is not clear. Presumably the vestibules were open-fronted, and would transmit borrowed light through the open door of the inner room, which would be shut only at night, when no light was wanted.

Equally, the uniformity of the buildings leaves no doubt as to the size and type of garrison stationed in the fort. They accommodate the ten centuries of a *cohors milliaria* of auxiliary troops. There is no space remaining in the fort for additional complications, such as a mounted detachment, which would require stabling demanding far beyond the area available. The whole arrangement is strikingly like the fort of Housesteads, where the milliary *cohors I Tungroorum* was quartered in the third century.

(g) When the barracks have been described, few other buildings remain to be recorded. Probably the largest were two *sheds* 18 feet wide, which bordered the *via praetoria*, backing on to the adjacent Barracks 2 and 3. Their outline was not traced in detail, but at the Hadrianic forts² of Housesteads, Halton and Birdoswald, store-sheds of similar type occur. It may be observed that the effect of long, plain wall-surfaces at this point,

¹ *J.A.*, xl, 111, note; cf. *J.I.*, vii, 157 (millecastle 9).

² Housesteads, *J.I.*, xxv, 240, pl. xix; Halton, *J.I.*, xiv, fig. 5, p. 165; Birdoswald, *CH.*, xxx, 172, fig. 1.

so different from the broken variety of a barrack-verandah, would be to concentrate all attention upon the headquarters building, which closed the vista in the very heart of the fort. The necessity for store-sheds is unquestionable when it is recalled that the men had no room in their vestibules except for kit. All extras, such as tents or reserve stores, would require the accommodation which such buildings would provide.

Behind the granaries lay two *open-ended buildings*, 64 feet long. Their plan was not traced in detail, and as recovered is not self-explanatory. They may have served as workshops or cart-sheds, which are not to be recognised elsewhere within the fort. Equally obscure in purpose is a small building behind the headquarters. It is 40 feet long by 30 feet wide, with a central longitudinal division.

(h) The Roman *military oven* is well known to have been a round platform of flat stones, served from a hob, from ground level, or from a stoke-hole, and covered by a dome of rough stones luted with clay. It was operated by filling the interior with flaming brushwood, raked out when consumed. On inserting the food to be cooked the door was closed, and the dishes ¹ were withdrawn at the appropriate moment.

Five such ovens were discovered at Fendoch, comprising examples of all the variant types. Their excavation, begun in 1937, has been carried out by Mr C. M. H. Millar, F.S.A.Scot., of Trinity College, Glenalmond, with his colleagues Messrs Carter, Hawthorn and Hall, and numerous pupils from the college, to whom warmest thanks are due for their enthusiastic interest and pertinacity.

Oven 1, in many ways the best preserved example (Pl. LVI, 1), lay opposite the end of Barrack 1. Its floor was 5½ feet in diameter, surrounded by stonework 8 feet in diameter and fronted with a hob 4 feet wide and 3½ feet deep. Oven 2, observed in 1936, had been much damaged by the plough. Its broken and heavily-burnt stones formed a ring 8½ feet in diameter, but it was impossible to recover further details. Oven 3 (Pl. LVII, 2) paired with Oven 2, had a floor 5 feet in diameter, surrounded by stonework 8 feet in diameter. It was served from a rude pit, into which ashes and some pottery (fig. 15, Nos. 1, 3, 4, 6, 8, 9) had been raked. Oven 4, pairing (Pl. LIX, 2) with Oven 5, has a floor 4 feet 8 inches in diameter, and external stonework 6½ feet in diameter. Its doorway faces west. The stonework is much reduced, because this oven had been demolished and thinly overlaid with clean gravel, upon which had been planted (Pl. LIX, 1) a new oven, reduced by the plough to a platform of rough stones like Oven 2. This is the only example of a complete reconstruction observed, though it must not be forgotten that the domes, like those of a kiln, might be rebuilt

¹ The food cooked was principally *buccellatum*, soldiers' biscuit, as was continued until late times; cf. *Ann. Marc.*, xvii. 8, *frumentum ex eo quod erat in sedibus consumendum, ad usum diuturnitatem excoctum, buccellatum ut vulgo appellant, humeris imposuit libentium militum*.

several times before the action of fire rendered the floor too broken and uneven to be of further use. Oven 5 has a floor of 6 feet in diameter, and stonework $8\frac{1}{4}$ feet in diameter. Its door opens on to a hob $3\frac{1}{2}$ feet wide and 4 feet deep, thus matching very closely Oven 1. Oven 6 was marked by a heavy deposit of ashes and burnt stones, but structural definition was lacking. Finally, a pit to south of the east gate, 4 feet wide, but of unknown length, yielded so much ash as to suggest that an oven otherwise unrecorded lay not far away.

The relation of the ovens to the barracks and their streets is sufficiently well defined to deserve special note (see fig. 2). Oven 1 falls opposite Barrack 1, just as Oven 6 is associated with Barrack 4. Ovens 2 and 3 are situated at the end of the street shared by Barracks 5 and 6, while Ovens 4 and 5 are similarly related to Barracks 9 and 10. Thus, Barracks 2 and 3, opposite which the ruins of Easter Fendoch precluded a search, and Barracks 7 and 8, represent the only *centuriae* without an ascertained complementary oven; and it will be recalled that an oven had been suspected to lie opposite Barrack 7. There can, in fact, be little doubt that in the original plan each century had one oven, in which it may be supposed that each mess-unit of eight men would bake its daily bread by *rota*. No examination of military ovens has previously been so extensive as to warrant such a conclusion.

(i) *The water supply* of the fort is conditioned by the fact that the water-table lies at least 100 feet below the moraine upon which the site is placed. This precludes the digging of wells, nor is it easy to suppose that a milliary cohort, even if unmounted, could be conveniently supplied with water from a single well in the forecourt of the headquarters. Again, it will be recalled that, while water-tanks were provided in at least two places, no attempt was made to collect water from the roofs of the buildings. The rain-water from the barrack roofs, the largest catchment area in the fort, was allowed to sink unheeded into the subsoil.

Reference has already been made, however, to gullies passing out of the fort at the gates. When excavated, these were found to be flat-bottomed channels, with sides for the most part rather irregular and weathered. The gully at the south gate, which was more thoroughly explored than the others, had formed part of a system, with a branch, of which the end was not reached, running for at least 140 feet along the *intercallum*. It had been disturbed throughout its course by numerous irregular delvings, getting deeper towards the west end. This was the feature which in 1936 had been mistaken¹ for a palisade-trench, which in parts it closely resembled.

The nature of this system of gullies, of which further traces were found in the *via praetoria* and on the north and south *intervallum* of the *retentura*,

¹ *Proceedings*, lxx. 403-404.

must now be subjected to further scrutiny. It will be recollected that the outflowing gully at the south gate was so situated that it must have been covered. It may here be added that it must also have been lined; for in the gravel and sand of Fendoch an unlined gully would not stand the passage of water for a week. In fact, such gullies as were uncovered during the excavation disintegrated under our eyes. No stone lining, however, was present; and, since it would have been pointless to dismantle stonework¹ for use again elsewhere, it may be assumed that the lining had been not of stone but of wood, the medium so universally employed for construction in this fort. It is evident also that the channel had been much disturbed, and the numerous irregular delvings along its course are difficult to explain except as made in digging out the woodwork. If, then, a wooden lining was in fact employed it must be further added that the conduit contained in the gully cannot have been a large one. Where it passes below the south rampart, out of reach of inspection, the gully is certainly not more than 18 inches wide at the bottom. Thus, it can hardly be interpreted as a sewer, and the only explanation remaining is that it was a water-pipe. Fortunately, analogies are not far to seek. Britain provides only one, the wooden water-pipes which supplied the cantonal capital² *Calleva Atrebatum*, now Silchester in Hampshire. The German provinces muster thirty-two, collected in a recent study³ by Ernst Samesrenther, and associated chiefly with forts, but also with towns and country estates. All the examples recovered lay below ground,⁴ in trenches or gullies precisely resembling those of Fendoch. It may be added that an interpretation of the gullies as ducts for water-pipes entirely explains the double outflow channels at the north gate, so difficult to understand except upon this assumption.

A system of water-pipes, however, demands as its essential complement an aqueduct to supply them. At 100 yards south of the south-west angle of the fort, an ancient leet, at one point obliterated by an old turf dyke, is seen making its way, along the north bank of the Fendoch Burn, on a narrow natural shelf high above the stream. Towards the west this channel runs as far as the infall of a nameless tributary, whereupon it curves sharply and begins to run up the valley of this stream towards the point where it could tap its supply of water. Its eastward course follows the Fendoch Burn until a gap occurs in the hummocks which overshadow it to the north. Seizing this gap, it turns at once sharply northwards, heading for the west gate of the fort.

A section cut across its course revealed (fig. 12) the heel of a flat-bottomed channel, 2 feet wide, which has clearly been cut down to facilitate

¹ At milecastle 50TW on Hadrian's Wall the drainage system was left intact at the time of demolition, although every other structural feature was dismantled, *CW*², xxxv, 225-226, fig. 7.

² *Archæologia*, lv, 422-424.

³ *Bericht der Römisch-Germanische Kommission*, 1930, xxvi, 24-157.

⁴ Cf. *ibid.*, pl. 11.

the removal of the structure which it once contained. It seems evident that this must have been a wooden pipe-line, joined with stout iron collars, of the well-known Roman type. A closed pipe is demanded because the conduit rises in level as it approaches the fort, implying that the supply was arranged as an inverted siphon, tapping the stream at an intake higher than the level of the fort. This method of gravitational water delivery was, however, so familiar to the Romans¹ that no difficulty is raised by its employment here. On the contrary, its occurrence in this remote glen may be regarded as an assurance of Roman date for the system.

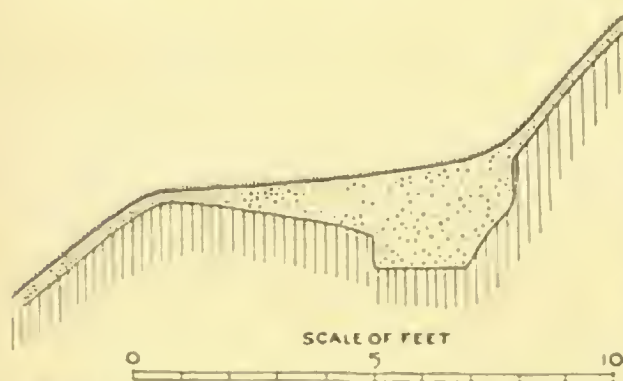


Fig. 12. Section through the Aqueduct Channel, Fendoch.

With the identification of the main line of supply, the function of the gullies in the fort becomes clear. Their purpose was to distribute the water, in open wooden gutters, or, more probably, in pipes, to tanks below ground-level, of which two have been noted above (pp. 122-123, 129). Systems of this type were not uncommon in the Roman forts of Britain, though only of recent recognition. Examples were collected in a recent volume² of these *Proceedings*; but the installation of which traces have now been identified is earlier in date than all,³ and at least equals them in interest.

Before describing the buildings, note was taken of how they were constructed. The description must close with an observation upon their ultimate fate. Evidence which pointed to a purposive dismantling of the fort has been cited here and there in the foregoing description, particularly in connection with the water supply. But this was by no means the only evidence of its kind. At an early stage in tracing the buildings it was seen that the regularity of their foundation-trenches was often disturbed at ends or junctions by rough delvings completely unlike the admirably precise excavation of the trenches themselves. An illustrated example occurs at the projecting corner of the centurion's quarters in Barrack 1 (Pl. LVIII, 1), where trenches in both directions are broken by

¹ Ashby, *The Aqueducts of Ancient Rome*, 34-37.

² *Proceedings*, lxxli, 307.

³ Perhaps the leaden water-pipes of A.D. 79 from Chester, inscribed with Agricola's name, may be regarded as slightly earlier examples of a similar system established in more permanent materials (*EE*, ix, 1039).

irregular cuts. A comparison may be made with the timber gateways of the dismantled fort ¹ at Old Church, where the irregular pits created by men digging out the posts were clearly to be distinguished from the post-hole and its clay-sealed runway. Even clearer evidence was forthcoming at the granaries (Pl. LVII, 1), where the three north-west foundation trenches of the north granary had been deprived of their vertical ends by slanting cuts, breaking through the end of the broadest trench. The very character of the cuts shows that they could have been effected only with a spade while levering the ends of the beams out of their beds.

As such a method of removal would imply, not all angles or ends were defaced; some remained intact because the beam would be pulled away from them. Thus, in the headquarters building the north-west angle was recovered undamaged (Pl. LV, 2). The north-east angle, on the contrary, had been heavily maltreated by delving, while the antis at the south end of the portico had been reduced to a mere heel of well-cut trench surrounded by a shapeless pit. The junction between the back wall and the south wall of the north administrative room in the same building had been deftly blunted by a bold spade-cut, which completely removed the sharpest part of the angle. While single observations of this kind may count for little, their cumulative effect is to suggest most strongly that at the close of the occupation the buildings had been methodically removed. Systematic dismantling of this kind is not unknown. An example has already been quoted but others may be added, as, for example, the mile-castle 50TW and turrets 50aTW and 50bTW on Hadrian's Wall,² or the fort ³ of Haltwhistle Burn.

Two further heads of evidence, of rather different kind, may be added. First, during the examination of the south gateway, in 1936, the workmen encountered, at the back of the north-east post-hole and to west of the gully, some forty large stones, as heavy as a man could lift, neatly arranged in a pile. When the post-holes were examined no impress of timber was observed in the filling, which was very loose, but one or two of the large stones were found firmly wedged at the bottom of each hole. It seems clear, then, that in this case the posts had been packed tight with large stones, later removed in order to release the posts and arranged in orderly fashion close to the scene of demolition.

Secondly, the tidy work of demolition must have involved, for the convenience of those engaged upon it, some measure of refilling the foundation-trenches, probably by no more complicated process than tipping or shovelling back the filling disturbed by the raising of the sills. If such a measure had not been taken, there is no accounting for the very

¹ CH², xxxvi, 174, figs. 10, 12.

² CH², xxxv, 226-228, milecastle 50TW; *ibid.*, 233, turret 50bTW; *ibid.*, 234, turret 50aTW.

³ AA², v, 231-236.

perfect preservation of the vertical sides and the occurrence in the filling of extraneous objects, principally broken and twisted nails (Pl. LX, 2). Unexpected confirmation of this view was afforded by the discovery, in a foundation trench of the headquarters building, of an unbroken auxiliary soldier's sword, described in detail below (p. 147). There is no occasion upon which a sword can have been lost in a foundation-trench except when demolition was in progress. It is not difficult to visualise the dangling impediment being laid aside on the edge of the trench as men stooped and strained to raise the foundation-sill from its bed: or, again, how, as the sill came up, the sword either fell into the cavity with the filling which was tipped back immediately from the beam-top, or was unwittingly shovelled into its position, about half-way down the filling of the trench, during tidying. But under what other circumstances is it easy to imagine that the accident can have occurred? If the above interpretation is correct, the fate of the sword is graphic evidence of a demolition which other evidence attests.

(iv) THE POTTERY.

(a) *Decorated Samian Ware.* By J. A. Stanfield.

If styles in ornamentation on Samian ware are chronologically reliable, the two decorated sherds from Fendoch may be dated with confidence to the reign of Vespasian.



Fig. 13. Fragment of decorated Samian Bowl, of Dragendorff's shape 37, from Fendoch.

1. (Fig. 13) Form 37, fabric of La Graufesenque. The decoration is part of a scroll design which is illustrated in a more complete form by Hermet, *La Graufesenque*, plate 81, 1: the arched concavity of the scroll, most of which is preserved on the Fendoch sherd, has been restored from Hermet's drawing. Above a fine ridge at the base of the design is a border of repeated four-leaved

ornaments of an early type, probably attributable to MACCARVS (Knorr, *Töpfer und Fabriken usw.*, 1919, plate 15, H): one pair of leaves in this ornament is different from the other, but the stamp, when applied to the Fendoch bowl, was worn enough to make this difference negligible. Above this border, and occupying the lower part of the divided concavity, are three quaint reptiles of the lizard kind (Oswald, *Index of*

Figure-Types, Nos. 2150, 2151: they occur also on two bowls in the style of the later Flavian potters BIRAGILLVS and MERCATO, Hermet, *op. cit.*, plate 85, 1, and Knorr, *Rotteil*, 1912, plate XXVII. 4); Hermet's drawing shows that in the alternating lower concavity two little dogs to right take the place of the lizards. Next comes a fine wavy line, and above that a built-up ornament of spiral tendrils and other details, flanked by two buds on turned-back tendrils. The remainder of the design, as given by Hermet, contains large vine-leaves and small birds of an early type, and it is clear that the bowl is transitional in style between the designs of the periods of Nero and Domitian respectively, as Hermet rightly saw. To go a little further, the neatness of execution and the early nature of some of the decorative types assist in indicating for this sherd a date nearer the year 70 rather than 80. From Barrack 10, west end.

2. (Fig. 14) Form 29, fabric of La Graufesenque. The upper frieze and central moulding survive, showing a moulded festoon of Neronian type, with pendant terminating in a large bud and panel of leaf-tips; but the bud itself and the leaf-tips are of a later, Flavian type. Below the central moulding there is a garland of imbricated leaves, similar to one used by GERMANVS on vessels of this form. In this case it is obvious from the roughness of the leaf-tips, the thickness of the bud, and the narrowness of the central moulding, that the fragment is rather later than No. 1, and should be dated nearer to the year 80. From Barrack 6, verandah rummel.

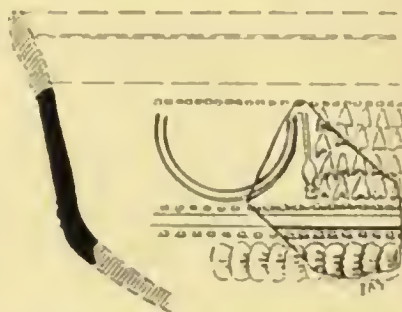


Fig. 11. Fragment of decorated Samian Bowl, of Dragendorff's shape 29, from Fendoch.

(b) *Other Pottery.* By Eric Birley.

The total yield of pottery was small, and fragments of *amphoræ* formed the bulk of it, but there are a number of interesting pieces included: it will be convenient to give a detailed description of the individual pieces before making any comment on the group as a whole.

There were only three fragments of undecorated Samian ware. One of these is part of the side of a small cup, form 27; its glaze, size, and contour combine to show that it is La Graufesenque ware. The other two are rim-fragments from platters of form 35 or, less probably, 36, showing the appliqué stalked leaves characteristic of those forms; these, too, are undoubtedly products of La Graufesenque, and the small size and neatness of the rims show that they do not belong to the latest stages of that centre's activity. The first two came from the *inter-*

vallum, north of oven 3, the third from the tunnel of the verandah of barrack 6.

Of the pottery other than Samian ware, only nine vessels are represented by pieces that deserve or admit of illustration (fig. 15):

1. Several fragments from a large mortarium, in light buff ware, with

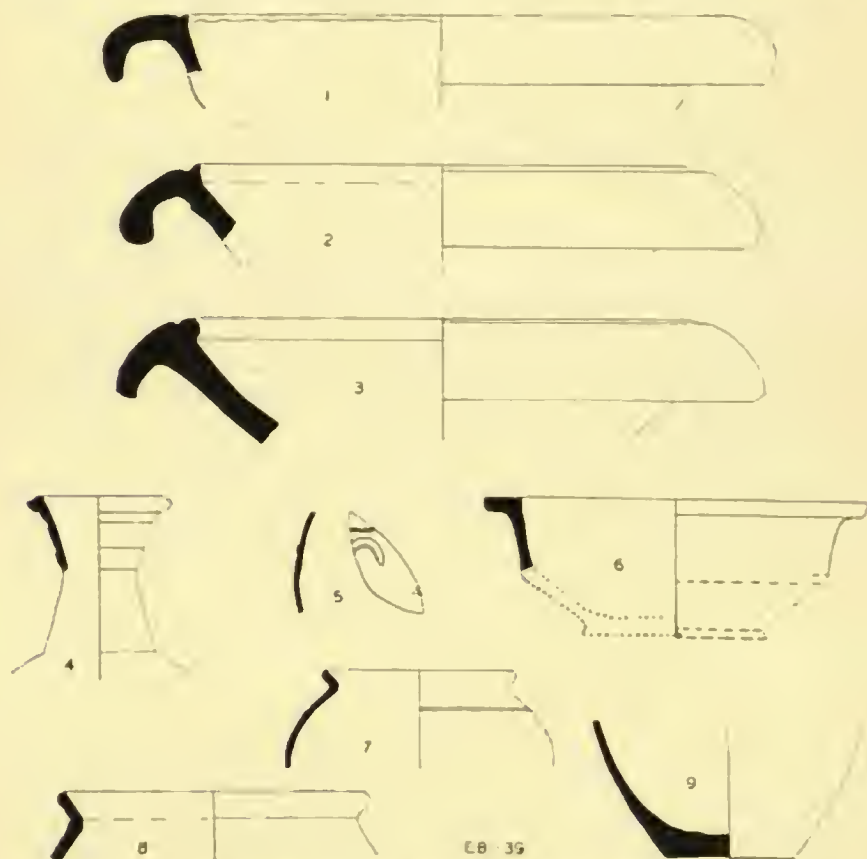


Fig. 15. Fragments of coarse Pottery from Fendoch.

a rather soft surface. The rim-section represents a compromise between the flat-rimmed type 14 and the hook-rim 34 in Mr Bushe-Fox's classification (*Wroxeter*, 1912, p. 77); among the closest parallels which I have noted are two rims bearing the stamp of the Gaulish potter Q VALERIUS VERANIVS, from Colchester (*Museum Catalogue*, No. 325) and Caerleon (*Archaeologia Cambrensis*, 1932, No. 254) respectively; the fabric of the Fendoch vessel seems suitable for attribution to that potter, whose

products are represented on many Flavian sites in Britain, among them being Camelon. From Oven 3.

2. Two conjoined fragments from a mortarium; the surface is hard and dirty white in colour, while the core is blue-grey. In section, but not in fabric, the rim has affinities with the mortaria of the Flavian potter SOLLVS; *Newstead*, fig. 34, 5, seems to be a close parallel to the shape. From Barrack 10, west end.

3. More than a quarter of the rim from a mortarium in buff ware, of rather coarse texture, with grit showing on the outer surface of the rim as well as on the interior of the bowl. I cannot quote a parallel to the form, but the fabric is undoubtedly early. From Oven 3.

Another mortarium, in a harder fabric, rather rough to the touch, is represented by a fragment too battered to allow a drawing to be made; it may have been *Wroxeter*, type 22. From Barrack 10, west end.

4. About half the rim of a jug in light buff ware, without any external wash. Parallels might be cited from a number of pre-Hadrianic deposits, for example *Malton*, fig. 15, No. 25. From Oven 3.

5. Fragment from the side of a jar in light buff ware, with appliqué decoration in brown, consisting of a group of dots and a crescent. I have not come across an exact parallel, but the general type is characteristic of Flavian deposits: cf. *Brough, E. Yorks*, 1934, fig. 6, B5-6; *Holt*, fig. 63, Nos. 54-55; *Malton*, fig. 15, Nos. 17-18. From the tunnel of the verandah, Barrack 1.

6. Rim-fragment from a carinated bowl; the ware is orange-buff in colour, and rather soft; on the flat rim there are slight traces of a double reeding. For the section, cf. *Newstead*, fig. 26, No. 3. From Oven 3.

7. Over half the circumference at the rim from a cooking-pot; its surface is grey-black, hard and rather rough; in fracture it is a lighter grey. The type is a well-known Flavian one (cf. *Newstead*, fig. 25, No. 7; *Corbridge*, 1911, fig. 7, No. 34; *Holt*, fig. 63, No. 57), which lasted into the early years of Hadrian (*Pollross Burn Milecastle*, pl. iv, No. 39). From Barrack 3.

8. Rim-fragment from a jar in orange-buff ware; I have noted no exact parallel to the rim, but the general type and fabric are not uncommon in Flavian deposits. From Oven 3.

9. The base and part of the side of a wheel-made jar; the outer surface is dark grey, the interior somewhat lighter in colour, while the core is red-brown. The surface is rather rough to the touch, as often happens with Flavian jars, but the absence of a moulding at the base is a feature that would be less unusual in a later deposit. From Oven 3.

The small amount of pottery available for consideration covers a remarkably wide range of types; but it must be owned that, apart from

the Samian ware, none of the types is distinctive enough to permit close dating within the Flavian period. Indeed, it is one of the misfortunes that attend the study of pottery other than Samian ware, that there are hardly any sites in Britain where it is possible to establish stages in the period from Vespasian to the accession of Hadrian, so that pre-Hadrianic pottery must often be lumped together and studied typologically.

It is therefore fortunate that the evidence of structures and Samian ware allows us to identify the other pottery from Fendoch as typical, not merely of the Flavian period, but of the decade A.D. 80-90—a time-lag of a decade from the estimated date of manufacture of the earlier piece of decorated Samian ware discussed by Mr Stanfield above.

(v) A COIN.

No coin was found during the present excavations. The only example recovered from the site is a *denarius*, recorded¹ in the following terms: "A silver coin, evidently Roman, in the possession of Mr James Young, Crieff, which was found in this place. It is of the size of a sixpence, having on one side a head in high relief; and on the obverse three figures, the centre one an eagle; the other two, as well as an inscription on each side, are so much effaced as to be nearly illegible."

This account was written in 1845, and inquiry has not elicited the present whereabouts of the coin. The description, however, is sufficiently detailed to invite an identification, in which I have had the advantage of the life-long experience of Sir George Macdonald. In his opinion the coin is an example of a common Civil War type (*Cohen*, 406 = Mattingly and Sydenham, *Roman Imperial Coinage*, i. p. 187, No. 34), issued in A.D. 69. This has an obverse with a bust of Mars, helmeted, bearded, right, and the legend *Mars Ultor*, while the reverse is an eagle between two standards, and an altar between the eagle and the standard on the right, with the legend *Signa p(opuli) R(omani)*. It will be seen how well this fits the description in the *New Statistical Account*, and it need hardly be remarked that a coin of this date would still be circulating in good condition during Agricola's governorship.

(vi) MISCELLANEOUS OBJECTS.

(a) *A sword*.—The most remarkable of the objects other than coins and pottery is the Fendoch sword (Pl. LX, 1). This was found in the foundation-trench for the south wall of the north administrative room in the *principia* of the fort. It lay lengthwise along the trench, which was over a foot

¹ *New Statistical Account, Perth*, vol. x, p. 262.

deep, and about half-way down in the filling, which was here of firm sand. The meaning of its presence there has been discussed upon another page (p. 142).

The sword is of iron and almost perfect, only a slight break, due to corrosion and now mended by expert hands at the National Museum of Antiquities, occurring at the tip of the blade. The total length of the object is $25\frac{1}{16}$ inches, of which $20\frac{1}{2}$ inches are taken by the blade from tip to guard. The blade is $1\frac{1}{16}$ inch broad at the guard, and tapers very gradually, reducing to $1\frac{3}{16}$ inch at $2\frac{1}{2}$ inches from the point. The surface is much blistered, rendering impossible a quite accurate estimate of thickness. The section has been formed by two shallow convex curves, with a faint suggestion of a central rib, insufficiently marked to deserve the name. Thus, the blade has been double-edged, and the guard now encloses $\frac{5}{16}$ inch of blistered iron at the thickest point; an estimate of $\frac{1}{4}$ inch for the original thickness must therefore be very close to the truth.

The bronze guard is $2\frac{7}{16}$ inches wide and $\frac{1}{2}$ inch in maximum thickness. It ends in two roughly kite-shaped cusps, $\frac{3}{8}$ inch high and $\frac{5}{16}$ inch broad, and rises in a sweeping curve towards the centre, which increases its height from $\frac{1}{8}$ inch to half an inch.

The tang is now $4\frac{9}{16}$ inches long, measuring from the lower edge of the guard. It is $\frac{5}{16}$ inch broad at the farthest extremity, and $\frac{5}{8}$ inch broad and $\frac{1}{4}$ inch thick where it enters the guard. At $\frac{5}{8}$ inch above the top of the guard the tang is encircled by a bronze binding, not more than $\frac{3}{32}$ inch wide.

The sword most closely resembles, in size and shape, the two so-called Celtic weapons¹ found at Newstead, which also retain their not dissimilar bronze guards. It is at least 4 inches shorter than the two swords² identified as *spathæ*, and is only 1 inch longer than the sword³ identified as a legionary's *gladius*. On the other hand, it tapers in the same way as the presumed *spathæ*.

While the circumstances in which the Newstead swords were found permitted a Celtic origin (without, however, excluding another explanation), the Fendoch sword is from a purely Roman environment (p. 142). It is thus preferable to regard it as a second variety of auxiliary's sword, designed for stabbing as well as cutting. The fact that auxiliaries were equipped and trained in both methods of aggression is shown by the Batavian tactics⁴ at the *Mons Graupius*, where slashing and stabbing were the order of the day. The Celtic affinities of the type, which Dr James Curle acutely perceived and rightly emphasised, are explicable by the well-known fact

¹ J. Curle, *A Roman Frontier-post*, pl. xxxiv. 8, 10.

² *Op. cit.*, pl. xxxiv. 6, 7, and p. 184.

³ *Op. cit.*, pl. xxxiv. 11, and p. 183.

⁴ *Agr.*, 30, *Batavi minere ictus . . . ora fodere*.

that the auxiliaries, so frequently of Celtic blood, commonly employed the weapons of their homeland. It should be remarked, moreover, that only the form of the sword-guard is reminiscent of the decorated Celtic examples¹ with which Mr Curle compares them. Three out of four of the Newstead guards² figured in the detailed study are undecorated. This is a profound difference, best explicable as the effect of harnessing provincial workmen for the mass-production required by the Roman army, as compared with the older devoted craftsmanship of an independent native smith.

(b) *Other Iron Objects*.—These (Pl. LX, 2) comprise a large iron nail or spike) $7\frac{3}{4}$ inches long and $\frac{5}{8}$ inch square at the thickest portion. The head is oval, round $1\frac{3}{4}$ inch wide at its greatest extent. The spike, which has been twisted by use or withdrawal, was found at the north gate in the east tower. As noted above (p. 117), it is valuable evidence for the size of the timbers in use. Seven smaller broken and twisted nails, found in trenches or post-holes on various parts of the site, have also been kept as evidence for demolition (see p. 142).

The north gate also produced five scraps of iron sheathing or binding. The largest measures 5 inches long, $1\frac{1}{2}$ inch wide, and $\frac{3}{8}$ inch thick, and all appear to have formed part of the same long strip. No hole for fastening appears in the surviving pieces, but they are otherwise very like the pieces of iron binding for doors³ from milecastle 52 on Hadrian's Wall.

Finally, a dozen shapeless fragments from the annexe proved on cleaning to be indistinguishable parts of an iron-plated object, small portions of strips, angle-irons, and sheathing being visible among the mass of corrosion, which was too tender for thorough treatment.

(c) *Gaming Counters*.—The first of these is an almost round, flat-bottomed lump of opaque creamy-yellow glass-paste, $\frac{5}{8}$ inch in diameter. On one side of the upper surface two tiny holes, $\frac{1}{32}$ inch wide at the top and $\frac{1}{32}$ inch deep, have been drilled with a pointed drill, marking, it must be supposed, a value for the counter. The counter, which came from the portico of the headquarters, has been made by pouring a blob of molten paste on to a slightly rough surface.

The second and similar counter, from the tank in the commandant's house, was of opaque white paste, without markings. It disappeared, owing to an unfortunate mishap, soon after discovery.

(d) *A Bead*.—A segment of a ribbed melon bead of blue faience, $\frac{9}{16}$ inch high and once about $\frac{7}{8}$ inch in diameter. These beads are common throughout the Roman period.

¹ *A Roman Frontier-post*, 186, fig. 19.

² *Op. cit.*, pl. xxiv, 11, 12.

³ *CW*², xxxv, 253.

(vii) HISTORICAL CONCLUSIONS.

The fort at Fendoch has now been described, together with the relics which it contained. It may then be asked what historical conclusions are warranted by this evidence.

Scanty though the yield of datable pottery proves to have been, the distinctive style of the two decorated Samian sherds (pp. 142-3) proclaims them as Vespasianic products of La Graufesenque; while the plain forms of the same ware (p. 143), though less susceptible of minute classification, show no sign of that degeneration in technique which marks the later phase of the factory's activity, in the closing decades of the century. The coarse pottery (pp. 144-6) is altogether less informative, but in no way conflicts with the date suggested by the Samian ware. This is the decade A.D. 80-90, with the balance weighted, if at all, in favour of the beginning rather than the end (p. 146).

Of these ten years, A.D. 82 was marked by Agricola's annexation ¹ of the tribes beyond the Forth. One fort at least was planted ² among them, soon to be subjected to an alarming attack. Since, however, it was not Agricola's custom ³ to plant isolated *castella* in annexed territory, it may be assumed that others existed. A year later, after the battle of Mons Graupins, *hiberna* were ready ⁴ to receive the troops in these lands and in such territory beyond them as it was proposed to retain under Roman control. So much for the literary evidence.

Archæology attests ⁵ that unquestionably the most notable of these *hiberna* is the legionary bridge-head fortress of Inchtuthil, which commands the gateway to Athol and Breadalbane and dominates also the Stormont and the northern fringe of Strathmore. The logical complement to Inchtuthil is provided by the fort ⁶ and river-port of Bertha, at the waters-meet of Tay and Almond, where a great bridge ⁷ across the Tay gave access to the south side of Strathmore and kept the whole system so far described in touch with land-routes to south and west. Of the two sites, however, Inchtuthil is much the more complex, and its structural remains, first examined in 1901, have been analysed ⁸ in a masterly study by Sir George Macdonald; they comprise a legionary fortress, succeeded by smaller *castella*. The legionary fortress was equipped with timber buildings strikingly like those of Fendoch; and it is reasonable to suppose that both sites fulfilled the same purpose, for the immediate task of either

¹ *Agr.*, 25, *ceterum orate, qua sextum officii annum incolabat, amplexus civitates trans Rodotriam silas.*

² *Ibid.*, *Caledoniam incolentes populi . . . oppugnare ultro castellum adorti.*

³ *Cf. Agr.*, 20, *civitates . . . praesidiis castellisque circumdatis.*

⁴ *Agr.*, 38, *ipsae peditem atque equitem . . . in hibernis locavit.*

⁵ *Proceedings*, xxxv, 182-242.

⁶ *Proceedings*, lili, 145-152.

⁷ Stuart, *Caledonia Romana*, 204, mentions the piles and iron cramps; *cf. Roy, Military Antiquities*, pl. xii., where the bridge is marked 400 yards upstream from Deeder's Ford; also Pennant, *Tour of Scotland*, 1772, Appendix xv, p. 451.

⁸ *JRS*, lx, 111-138.

is to command an important Highland pass. While Fendoch, however, is essentially an outpost, Inchtuthil, corresponding to eighteenth-century Perth, occupies the commanding central position, whence troops could reach easily any threatened part of the north-western front. The relationship of the two sites is thus clear. In the face of the Highland massif, a barrier just as formidable as the Rhine or Danube, Inchtuthil, the core of resistance, was set like Xanten, Mainz, or Windisch, in the main pathway of aggression. Fendoch seals an important but less central pass, by means of a large auxiliary cohort dependent upon the legion. The same dependent function is fulfilled by Dealgiuross, which blocks the head of Strathearn at a point commanding every route to west and north. If, however, the positions of these three crucial sites demonstrate the intentions of those who planted them, it cannot be thought that they complete our knowledge of the system. Other forts must have existed in relation to equally important passes farther south-west and north-east.

It must be remarked, however, that the genius displayed in selecting the known sites seems to imply a most thorough reconnaissance of the whole area. It would not suffice to survey the problem from the plains. For a fleeting moment Roman scouts must have penetrated the mountain barrier, if they were to acquire a clear understanding of the topography which they mastered so well. No very deep penetration is needed. Such views as are obtainable from the not too far distant summits of Ben Lomond, Ben Ledi, Schiehallion, Ben Lawers, or Ben Eriocht, would suffice to reveal the difficulties that lay ahead and the best way to surmount them.

The time absorbed by reconnaissance would be small indeed compared with that spent upon equipping the newly chosen sites. To prepare, between campaigning seasons, timbers for a legionary fortress 70 acres in size and a series of satellite forts of the Fendoch type would strain all the resources of the legionary carpenters. No doubt it had been the pressing claims of similar operations farther south which had induced Agricola to intercalate amid campaigns a fourth season spent wholly in consolidation of new territory. Even the sixth season,¹ which saw the occupation of the area now under consideration, included little offensive action on the Roman side, while the seventh summer² was largely spent in minor actions intended to promote the great engagement whose issue ranked with that of Flodden as a disaster for Scotland. At this point, archaeology can supply a valuable comment upon the scale of the preparations. Farther south, on the Forth-Clyde isthmus, a temporary³

¹ *Agr.*, 25-26. The bulk of the work was clearly the occupation of new territory and reconnoitring beyond it; a cautious advance by land and sea up the north-east coast.

² *Agr.*, 29.

³ *Agr.*, 23. The temporary nature of the work is quite clear from the outset, *ac si virtus etc. paleretur*.

halting-point had been equipped with *præsidia* during the fourth campaign. Excavation has shown that these, whether large or small, were fortified ¹ merely with ditches and stockades, of the kind typical ² of semi-permanent works. They were never replaced by true *castella*. Only when the terminus suited to Roman prowess, or Roman convenience, had been reached, were time and labour expended upon such elaborate forts as Fendoch. Thus, the impression of permanence immediately conveyed by the plan of that fort is usefully confirmed by the contrast with works farther south.

If more were known about the sources of supply for the great timbers required by such forts as Fendoch, it would be easier to estimate the amount of labour involved. But it must be remarked that only notable trees, presumably oaks, would supply the timbers for gateway-towers, ascertained to be one foot square in section and estimated as some thirty feet long. For the foundation-beams elm would provide a better material, easy to cut and, to judge from place-names,³ ubiquitous in Celtic Scotland. It must not be forgotten, however, that none of these trees occurred near Fendoch, as the pollen-analysis has shown (p. 154). Thus, all the timber would have to be cut elsewhere and transported to the site. There is no reason why this material, however, should not have been prepared for some time in advance of the work intended, if only to allow for seasoning. Long before the frontier was actually fixed it must have been known that timber forts would presently be required and that preparations for building at least a certain number could be put in hand. In this connection the plan of Fendoch is most suggestive, for it conveys as a whole the strongest impression of standardisation, comparable with that which marks the plan of Housesteads fort on Hadrian's Wall. Further, the design of the individual buildings is so closely related to uniform sizes and dimensions as to suggest that it is derived from a stock plan, based immediately upon supplies of posts and boards cut to standard dimensions in the military timber-yards. Given such conditions, it would be possible at any time to prepare and stock timber for military buildings, as suggested above; so that the material could be treated like parts for sectional huts, drawn from stock, assembled on the site, and erected in foundation-trenches dug to the standard size from working drawings issued with the set. The official organisation for the purpose was provided by the *præfectus fabrorum*⁴ and his staff; while the practical operations involved are so simple, and

¹ *Roman Wall in Scotland*, 2nd ed., p. 196, fig. 10, and p. 212, Muntrills; p. 268, fig. 34, and p. 269, Croy Hill; p. 272, fig. 35 and p. 273, Bar Hill; pp. 311-312, Cadder.

² *Cichorius*, *sc.* xvii.

³ Watson, *Celtic Place-names of Scotland*, s.v. *Lemannonlus*, *Llwyfalu*, *Lomond*, etc.

⁴ *Vegetius, de re militari*, II. 11, *habet præterea legio fabros lignarios, structores, carpentarios, ferrarios, pictores, reliquosque artifices ad hibernorum ædificia fabricanda . . . horum iuxta erat proprius præfectus fabrorum.*

the advantage in practice so great, as to render the effort abundantly worth while.

These preliminary considerations enable us to see the fort at Fendoech in a wider perspective. There can be little doubt that the site was chosen in A.D. 82 or 83, and that it was one of the *hiberna* to which the victorious auxiliaries, milliary cohorts of Batavians and Tungrians mentioned by Tacitus, retired after the battle of Mons Graupius. The situation of the fort (Pl. LII, 1) indicates its purpose with telling clarity. It so blocks the Sma' Glen, the gateway of Breadalbane, as to control all commerce with the Highlands and to bar the upland raiders out of Strathearn. Anyone standing upon the site and looking up the pass must feel that nowhere did the disciplined might of Rome come to closer grips with Highland lawlessness. The inaccessible glens and forests, breeding chronic poverty and reckless bravery, were thus sealed off from the Roman world by a cordon of posts in which may be recognised Agricola's scheme for a permanent solution of the question. As an element in this frontier, Fendoech is not unique: it shares with Inchtuthil and Dealginross a claim to illustrate Agricola's sharp eye for a good site—*aduolabant perili non alium ducem opportunitates locorum sapientius legisse*. As attesting, however, his power of logical attention to detail (*ratio curaque*) Fendoech occupies the special place of an example which is not only the first of its kind, but perhaps the most complete that will ever be recovered: for Agricola's forts normally lie deep below later remains which preclude the complete examination that was here possible. The buildings have already been described in detail, and no repetition is required. But it must be observed as a new and important fact in the history of the Roman auxiliary army that by Agricola's time the standard planning of quarters, for which the best evidence in Britain has hitherto been the Hadrianic fort at Housesteads, had already been evolved. The fact itself is not indeed surprising; it is evident that the designers of forts were following only the practice already introduced¹ for legionary fortresses; but no demonstration of the point has hitherto been available on the scale now attained.

Agricola was recalled in the winter following *Mons Graupius*: *tradiderat . . . successori suo provinciam quietam tutamque*. So far as the northern frontier was concerned, it may be assumed that quiet was produced by the great victory. Safety would undoubtedly be assured by the new forts and legionary fortress. It is thought, however, that the system did not remain for long unrevised. Historians have long known that in A.D. 86-88 the four legions stationed in Britain were reduced to three by the transference² of *Legio II Adiutrix* to the Danube. It may be regarded

¹ E.g. *Vetera*, or *Novesium*.

² Ritterling, *Jahresheft d. Öst. Arch. Inst.*, vii, *Beiblatt*, 37 f. dates the withdrawal to A.D. 85 (cf. Pauly-Wissowa, s.v. *Legio*); Filow, *Klio*, vi, *Beiblatt* pp. 39 f., preferred A.D. 88.

as likely, though the matter stands in need of proof, that this loss of strength was immediately followed by the abandonment of the legionary fortress at Inchtuthil. This did not mean, however, that the Roman hold on Strathmore and Strathearn was forthwith relaxed. Both Inchtuthil and Dealgiuross have produced ¹ *denarii* of A.D. 86, which are not likely to have been circulated and lost on the north-west frontier until after the withdrawal of the legion; while the coin at Inchtuthil was found ² in a bath-house which has nothing to do with the legionary occupation of the site. No attempt has yet been made, however, to correlate the history of these sites with that of Fendoch, where there is evidence of a systematic and peaceful evacuation. Gateways, principal buildings, barracks and water-conduits were all dug out of their foundation-trenches and their materials returned to stores, leaving traces to which it is peculiarly difficult to attach an estimated length of occupation. We are left with only such facts as an observation that only one oven gave evidence of repairs, or that the streets seemed little worn. There is no evidence from floors; for these, to judge from the lack of paving and hearths, seem to have been everywhere of boards, incorporated in the dismantled buildings and removed with them. Thus, while there is sufficient evidence to show that the occupation was not momentary, it is extremely difficult to attach a term to its duration.

Three facts, however, emerge from these observations. The design of the fort suggests, as strongly as such evidence can, that a permanent occupation was contemplated. Secondly, the buildings were dismantled systematically while still in good condition. Thirdly, the fort was deliberately abandoned according to plan: *nullum ab Agricola positum castellum aut vi hostium expugnatum aut pactione ac fuga desertum*. When the end came at Fendoch, it came as the result of Roman deliberation rather than enemy pressure. The peaceful revision of Agricola's arrangements thus would appear to have come both fairly quickly and perhaps sooner than had been contemplated.

So much concerns Fendoch. It would be altogether rash, however, to argue from this site to all. Of neighbouring sites, Dealgiuross and Strageath are untouched by the spade; while past work at Inchtuthil and Ardoch disclosed remains so much more complicated than those at Fendoch as to call loudly for a fresh definition of stratification at both places. The signal-towers on the road between Strageath and the Tay occupy an undefined place in the history of the same locality. The present requirement is, therefore, the support for a programme of skilled selective excavation covering all these sites until the relation between them has been defined. Fendoch will then take its place as an illustration not only of Agricola's work, as it now does in most remarkable fashion, but

¹ *JRS*, ix, 130.

² *JRS*, ix, 115; *Proceedings*, xl, 233.

also of the changes instituted by his successors. *Multos veterum velut inglorios et ignobilis oblivio obruit; Agricola posteritati narratus et traditus superstes.*

APPENDIX.

REPORT UPON EARTH SAMPLE FROM FENDOCH.

By Dr A. RAISTRICK.

Sample from Turf-rampart.—This is a real turf-soil material with a very small percentage of pollen, about equally grass-spores and hazel-alder pollen. The sparseness of the pollen suggests at most fairly open scrub in the immediate vicinity, probably mainly grass land with occasional hazel or alder.

It remains to thank all those who have permitted and facilitated the excavation. The relics have been generously presented to the National Museum by Captain J. Drummond-Moray, and for permission to excavate we were indebted to the late Captain William Augustus S. Home Drummond-Moray of Abercainey, and to the occupier of Fendoch, Captain Ian Macrae, whose kindness and hospitality greatly eased the difficulties of work on a remote site: nor must the good offices of Mr H. J. Bell, the estate factor, be forgotten. Mr Booth, Burgh Surveyor of Crieff, very kindly lent surveying tackle on three separate occasions. The help in excavation received from Mr C. M. H. Millar, F.S.A.Scot., and other friends at Trinity College, Glenalmond, has been mentioned in the text. Lastly, Mr Alexander Cameron, Captain Macrae's shepherd, and Mrs Cameron, afforded us shelter and refreshment with unflinching kindness and generosity.

MONDAY, 13th March 1939.

ALEXANDER O. CURLE, C.V.O., LL.D., Vice-President,
in the Chair.

A Ballot having been taken, the following were elected Fellows: Dan Carmichael; James Douglas; Frank Allen Greenhill, M.A.(Oxon.); Walter Philip Mayes; James Graham Paterson; Leslie Ord Pinder; G. Mackenzie Trench, O.B.E.; Brian J. G. Yule.

Donations to the Museum and Library, as per lists at end of volume, were intimated and thanks voted to the Donors.

The following Communications were read:—

I.

EXCAVATIONS ON BEHALF OF H.M. OFFICE OF WORKS AT
TAIVERSO TUICK, TRUMLAND, ROUSAY. By WALTER G.
GRANT, F.S.A.Scot.

The discovery of Neolithic burial chambers at Taiverso Tuick (O.S. Orkney sheet XC) in 1898 has been described by Lady Burroughs in a manuscript now preserved at Trumland House, and in our *Proceedings*, vol. xxxvii. pp. 73-82, by Sir William Turner. The discovery was an incident in the excavation of a sheltered site for a garden seat in a small mound, situated almost, but not quite, on the summit of a ridge which slopes up northward from the sea to 217.42 O.D. The mound was "about $4\frac{1}{2}$ feet above the natural lie of the ground on its lower side and 2 feet on its northern side, and had a diameter of about 30 feet." In the course of its excavation Lady Burroughs records first the exposure of "a neat, well-preserved, rough-built wall with uprights of stone slabs," then the discovery of "three stone kists full of small bones, earth, and vitrifications," and finally the disclosure of a subterranean chamber. The latter has been fully described in our *Proceedings*, and the relics from it now repose in the National Museum. The similarity of its plan and contents to those of Unstan at once establish its character as a collective burial chamber of the type currently termed Neolithic. The "three kists" have disappeared, but as they appear to have contained cremated bones and to have "been built on a layer of earth about a foot thick" covering the lintels of the subterranean chamber, they may be regarded as Bronze Age intrusions. The "neat wall with uprights of stone slabs" remained a puzzle to such antiquaries as have visited the site. The exposed strip of dry-stone walling terminating in upright slabs and concave to the south recalled the plan and masonry of the intact chamber below. But antiquaries were reluctant to believe that the two chambers were contemporary, since a two-storeyed burial vault would be unprecedented.

The excavations by H.M.O.W. in 1937 have conclusively established that the upper construction was really a burial vault belonging to the same archaeological period as the lower by the recovery of its complete plan, and particularly by the discovery of an entrance passage, previously blocked. At the same time the truly subterranean character of the lower chamber was defined, and a new intact chamber was revealed close to the latter's mouth.

The plan of the upper chamber might be described as an oval, 15 feet 6 inches along the major axis from east to west and 6 feet along the minor axis (fig. 1). But the south side of this "oval" is really flattened out, and the east end has been reduced by truncation and restriction to a cell. The

floor of this chamber is formed by the lintels of the lower one, on which the masonry of the walls rests save at No. 5 (Sir William Turner's statement that "the westmost lintel crumbled into flakes and had to be removed" is clearly wrong, since the lintel in question, No. 6, is still in position with the intact walls of the upper chamber resting upon it. His statement may, however, mean that a flooring slab had once rested on lintel No. 6). Save at the east end there was no trace of a prepared clay floor resting upon the lintels such as Mr Calder observed in the upper chamber at Huntersquoy, Eday. However, the upper surface of the easternmost or first lintel, which forms the floor of the eastern cell of the upper chamber, is $7\frac{1}{2}$ inches below that of the second lintel and the rest of the chamber floor. This disparity was partially rectified by a layer of local clay on the floor of the east end, and this survived to a depth of 2 inches under the masonry of the east wall. The crumbled lintel or flooring slab at the westmost end removed by Turner might have rectified the existing disparity in levels between lintels 5 and 6; the former being some 2 to 3 inches higher than the latter.

The lintels of the lower chamber not only provide the floor of the upper, but they also condition the planning of its masonry. The skeleton of the chamber walls may have been formed, as in Caithness, of slabs on edge transverse to the line of the walls. Of such, three survive in the north wall (Pl. LXIII, 2) and one in the south; Mr Richardson detected the gap for a second slab in the two surviving courses of masonry of the south wall opposite the westernmost slab on the north wall, and a slab, actually found in the debris filling the west end of the chamber, has accordingly been set up in the gap. The two eastern slabs form a pair, both resting upon the first lintel and with their faces against the edge of the high second lintel. They serve to frame the portal to the eastern cell. The surviving western slab stands, not on lintel 5, but on virgin soil beyond its end, and the same is true of its southern counterpart as now set up. Between the slabs of this skeleton the walls are formed of coursed masonry. As far as they survive, the inner faces of the masonry are almost flush with the edges of the uprights, so that the latter do not effectively serve either to divide the chamber into compartments or to frame stalls.

Entrance to the chamber was provided by a passage, $1\frac{3}{4}$ foot wide and 11 feet long, opening rather east of the centre of the north wall immediately west of the large lintel 2 of the lower chamber. The passage is lined throughout with dry masonry, surviving in places to a height of 3 feet, the basal course of the east wall for a distance of $3\frac{3}{4}$ feet being formed by lintel 2, the western edge of which defines the line of the wall. The passage was, however, found blocked with similar masonry at its inner end, a phenomenon noted in comparable burial-places in Scotland and elsewhere. The ends of the building slabs forming the west wall of the

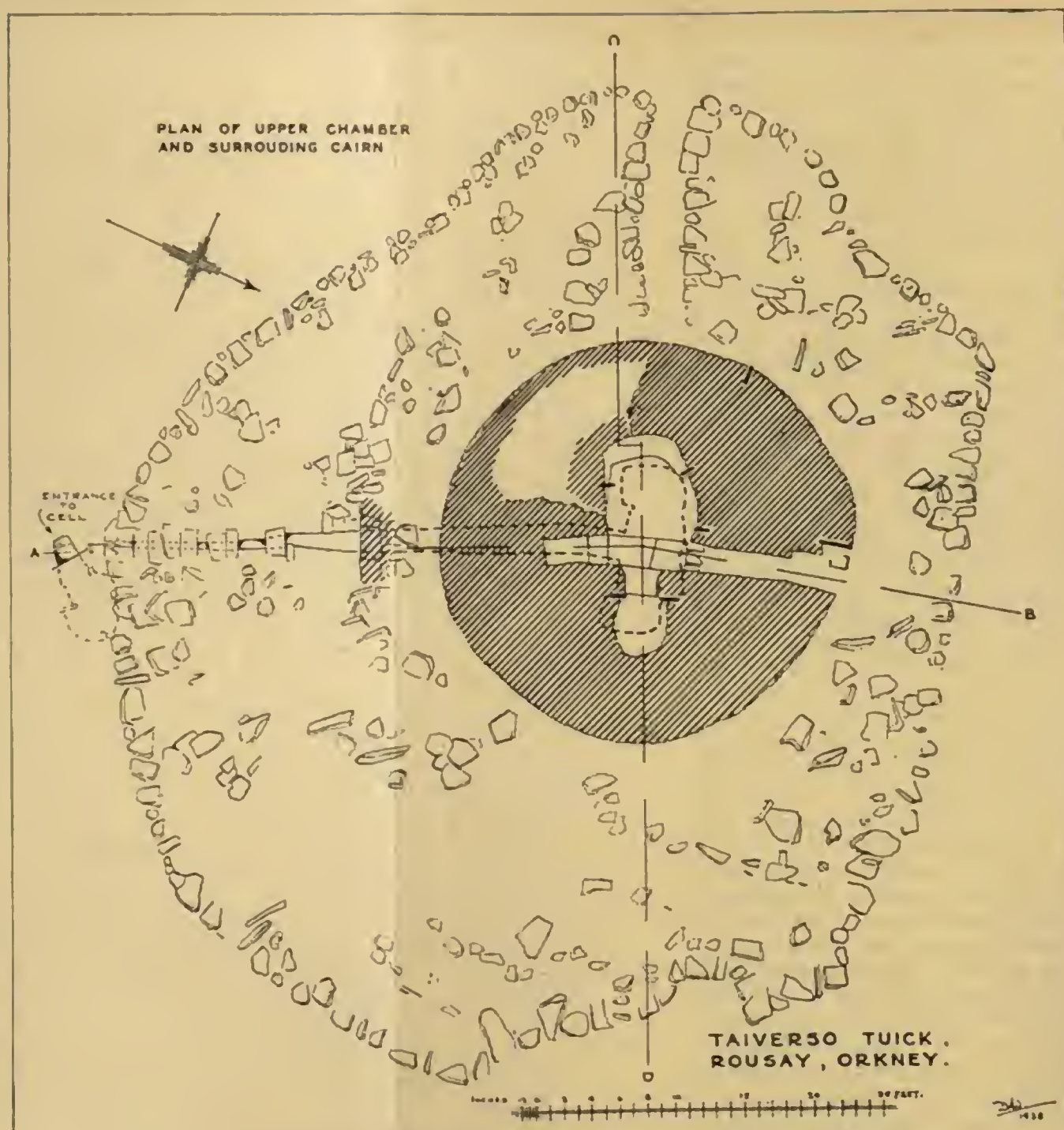


Fig. 1. Plan of Cairn at Talverso Tuick.

passage also constitute the north wall of the chamber between the passage mouth and the central upright, a distance of 10 inches. Between the central and western uprights the north wall is slightly concave, and, perhaps owing to slip, seems corbelled, so that the overhang against the west upright, 3 feet from the floor, is already 8 inches. Beyond the upright the wall curves inwards more rapidly and the oversailing is accentuated, so that immediately west of the upright the last surviving course, 2 feet 4 inches from the floor, projects as much as 2 feet beyond the line of the foundation course.

The south wall is nearly straight from the south-west corner of the rounded western end, but it has been so much damaged in the preparations for the shelter that for most of its length only two courses of masonry survive, and only a gap between the horizontal slabs opposite the west upright in the north wall indicated the position of the counterpart which has now been set up by the Office of Works.

Be that as it may, the south wall turns south at a right angle, 5 feet 8 inches from its western end and precisely opposite the mouth of the entrance passage, to give access to a recess or cell. The entrance to the latter is 2 feet wide. Beyond the gap the line of the south wall is not continued, but the east wall of the recess is continued northward 1 foot 4 inches beyond that line along the western margin of lintel 2. Similarly the east wall of the entrance passage is continued 2 feet farther south than the north wall along the same lintel's edge. The two masonry piers, formed by the continuation of these walls, end in carefully rounded corners, beyond which both walls run eastward, only 2 feet apart, for a distance of 2 feet across lintel 2 till they abut against the easternmost pair of uprights which, as noted above, are set against the eastern edge of lintel 2. The piers thus border a short passage which leads, through the portal formed by the uprights, to the east compartment or cell. The latter is horse-shoe-shaped. The floor, as noted, is some 7 inches lower than that of the main chamber (Pl. LXIV, 2).

The provisional description of the upper chamber might therefore be amended by describing it as an oval truncated at the east end, with a horseshoe cell at that end and a second cell in the south wall. The latter cell is really little more than a passage $4\frac{1}{2}$ feet long and about 2 feet wide continuing the line of the entrance passage and almost above the entrance of the lower chamber. For the first $1\frac{2}{3}$ foot the floor of the cell is formed by lintel 3, beyond the latter's south end by the lintels roofing the passage of entrance to the lower chamber. Even the innermost of these lintels is some 6 inches below the surface of lintel 3, so that most of the cell lies at a lower level than the main chamber. The deep inner part of the cell is roofed with two lintels, 2 feet 6 inches from its floor, but no lintel survives over that part which is paved by lintel 3. The rear wall of the cell is

straight and vertical and not very effectively bonded into the side walls, so as to give rather the impression of a blocking.

The upper chamber was covered with a cairn bounded by an almost circular retaining wall. This is bonded into the wall of the entrance passage on the east. On the west side of the entrance, though a single surviving course of masonry carries on the line of the passage to the circumference of the cairn, the retaining wall only begins again west of a flat slab on edge set parallel to the passage wall and $1\frac{1}{2}$ foot back from its line at the western corner of the entrance. Between the line of the west wall and this slab only rough blocking survived, so that there may originally have been a sort of recess on this side of the entrance. A second slab on edge is built radially into the retaining wall 16 feet farther west. Beyond the retaining wall a thin spread of stones extends for about 11 feet towards the summit of the hill to the north and west and 24 feet down hill on the south (Plates LXIII and LXIV, 1). No trace of an outer wall or peristalith could, however, be found, though a careful search for one was made at Mr Richardson's request. However, a curious alley, clear of stones and roughly bordered with boulders (not building slabs), leads through the stony area to the base of the cairn's wall on the west (Pl. LXIV, 1). It is possible that this is somehow connected with General Burrough's operations, though there is no evidence to support this contention.

The chamber just described is built above and upon the lintels of a smaller subterranean chamber (fig. 2). The latter has been adequately described already by Sir William Turner. The chamber, with a total length of 12 feet, a maximum width of $5\frac{1}{3}$ feet, and a height of $4\frac{2}{3}$ feet is, like the upper one, constructed round a skeleton of five uprights, but is entered from the south. The south wall is almost straight and vertical. The rear wall is built in two segments on either side of the central upright, both concave. The ends are curved, forming cells like flattened horseshoes. The three slabs in the north wall project to form stalls occupied by benches formed of slabs raised 1 foot above the floor. The end compartments, similarly benched $1\frac{1}{2}$ foot at east and $1\frac{1}{2}$ foot at west above the floor, are separated from the central part of the chamber by the portals formed by the paired uprights in the south and north walls, but the southern uprights do not project appreciably beyond the line of the wall-face. While the front wall is practically vertical, the end and rear walls slope inwards in four distinct segments, but this seems due to slip rather than deliberate corbelling. Eke stones have been inserted above and behind the uprights where these do not reach the level of the lintels.

The entrance passage, which contracts outward, was found partially blocked by a slab fitted into the side walls some $13\frac{1}{2}$ feet from the chamber but continued roofed for a total length of 18 feet, beyond which an open trench, to which we shall return later, extends for a further 19 feet.

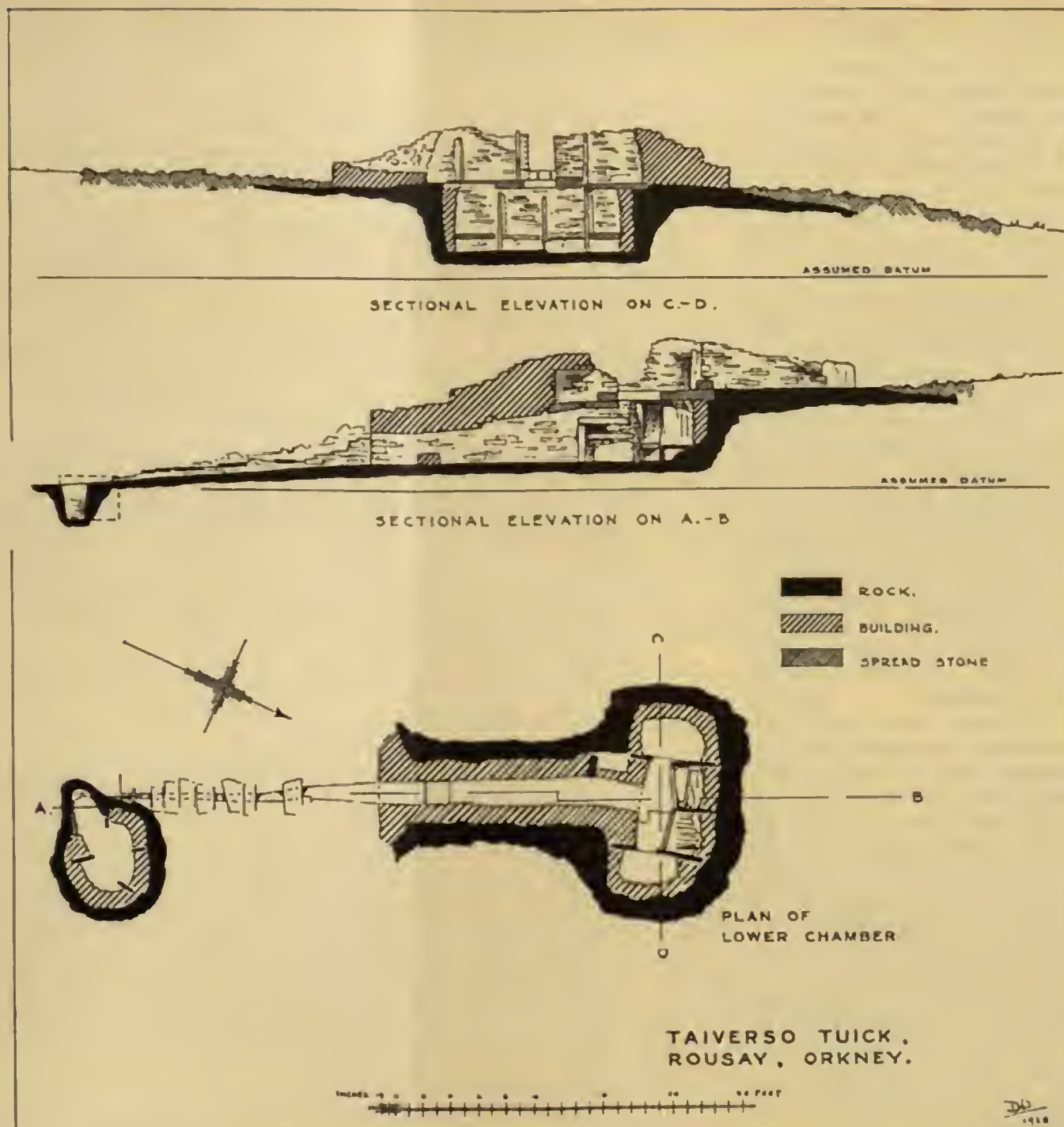


Fig. 2. Elevations and Plan of Chamber.

The most striking fact about the lower chamber, not sufficiently emphasised in the original report, is that it is built entirely in an artificial excavation in the hillside, the masonry walls of chamber and passage being merely a lining to the crumbling rock and clay of the shaft. The excavation had been carried down by the tomb's builders to a horizontal bed of fairly solid rock which actually forms the chamber floor. A quarried ledge of similar rock forms the basal course of the south wall, west of the entrance. The irregularly sloping rock-face of the excavation is also exposed under the benches of the terminal compartments and the northern stalls, the bench slabs actually reposing at the back on ledges of rock though supported in front by building, and in a gap of the passage's western face, 2 feet 6 inches from the chamber. Here the rock lies $1\frac{2}{3}$ to 2 feet behind the face of the passage wall some 2 feet above the floor, with loose stones lying between the back of the wall and the rock. By careful removal of a stone just below the first lintel in the north-east corner the natural clay capping the rock was found about 10 inches behind the wall-face (see Sections A-B and C-D on fig. 2).

The lintels of the roof too, while undoubtedly supported by the masonry walls, generally rest also on the solid ground beyond the limits of the original excavation. Lintel 1 (on the east) extends under the walls of the upper chamber well beyond the limits of the lower's masonry walls. The enormous second lintel, 10 inches thick and over $9\frac{1}{2}$ feet long, was proved to be embedded on solid clay at its northern end so that some $1\frac{3}{4}$ foot of its total length probably rests on solid ground. The sixth lintel likewise rests on the same solid clay ground as the end walls of the upper chamber. A comparison of the plans will show how the upper chamber's walls, even when resting on the lintels of the lower, are in most cases vertically above, not its masonry walls, but the walls of the original pit. The passage too must originally have been an open trench subsequently lined with masonry and lintelled over for a distance of 18 feet. Beyond the lintelled section the sloping walls of this trench cut in the solid are actually visible to-day. And at the mouth of the roofed section the uppermost 18 inches of masonry are carried round for some $1\frac{1}{4}$ foot on either side so as to abut against the sloping walls of the trench (Pl. LXIII, 1).

The passage does not terminate, as might have been expected, where the natural slope of the hill would bring its floor level with the ground surface, some 20 feet out from the chamber. It is continued as a narrow channel, only 18 inches wide, tapering to $2\frac{1}{2}$ inches wide for a further 19 feet. The walls of this channel are lined with masonry, continuous with that lining the passage, and it is, moreover, roofed with miniature lintels, some 9 inches to 2 inches above its floor, though only six of these were in position in 1937. This small channel gives the impression of being a drain, designed to carry off water from the main chamber. But Lady Burroughs remarked

in 1899 that it could not fulfil such a function owing to the blocking stone 13½ feet down the passage already mentioned. In fact no discharge along the channel was observed during the heavy rains of July 1938. No water percolated into the chamber through the side walls, and the rain that had come in through the broken roof seeped away in a day. Accordingly, the natural joints and bedding planes of the rock must provide sufficient drainage to make an artificial outlet for water unnecessary. Finally, the channel terminates at the mouth of a miniature rock-cut chamber, so that any moisture it carried would be discharged into the latter.

As noted earlier, the upper chamber is bounded by a retaining wall, while beyond this is a spread of stones with no outer wall or peristalith. Tarring and excavation, to define the area of this spread, was carried out in 1937, and in doing this a "loose stone" in being removed brought into view the interior of a small subterranean cell situated at the termination of the continued "trench or drain" from the lower chamber (Pl. LXV, 1).

Very little soil had percolated into the cell past the crude blocking, if such it were, and cleaning out revealed a horseshoe-shaped subterranean chamber hewn out of the rock and lined with most precisely and perfectly built masonry, and having an unlined rock-hewn entrance way leading into it from the south-west (fig. 3). Examination of the entrance showed that the chamber plan had been primarily hewn out of the natural rock, which is split off in layers approximately 1 inch thick, and suggests, at the downward sloping entrance, miniature steps. This entrance passage, 2 feet 3 inches long and widening from 12 inches to 2 feet 3 inches at the chamber mouth, has a flat rock floor, level with that of the chamber, and is now spanned by a single lintel stone 13 inches wide and 3 inches thick at 1 foot 9 inches from the floor, supported on the natural rock at its northern end and on a slab on edge at its southern end. This slab on edge, which suggests a door portal, has no counterpart on the north.

The chamber or cell, the main axis of which south-west to north-east is 5 feet long, and minor axis south-east to north-west 4 feet 3 inches long, is roofed with three lintels at from 2 feet 6 inches to 2 feet 11 inches above its flat and level rock floor. There are four slabs on edge set radially to the chamber: No. 1 to the right on entering the chamber projects some 3 inches beyond the masonry which lines the chamber between the right "door portal" and No. 1 slab and 11 inches from the walling to the north-east; No. 2 projects some 5 inches to 12 inches beyond the masonry walls; No. 3 is practically flush with the walling; and No. 4, projecting 3 inches from the chamber's masonry wall, has no abutting building work on its passage or south-west face, and shows its full width of 6 inches. The walling to the chamber between slabs 1 and 4 is built concave on



1. Entrance to Lower Chamber.



2. Ruins of Upper Chamber.

Caln at Talverso Tulek.



1. Spread of Stones round Cairn.



2. Upper Chamber, looking east.
Cairn at Talsersa Tuick.



1. Entrance.



2. Upright.



3. Detail of Masonry.
The Miniature Chamber.

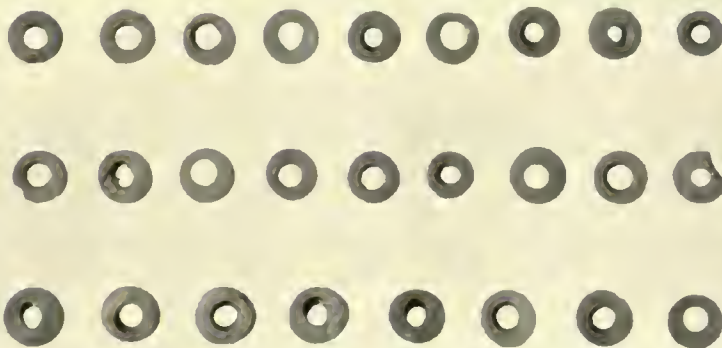


1 0 1 2 inches.

1. Bowl 1 from Miniature Chamber.



2. Bowl 2 from Miniature Chamber.



3. Beads and Pendant from Upper Chamber.

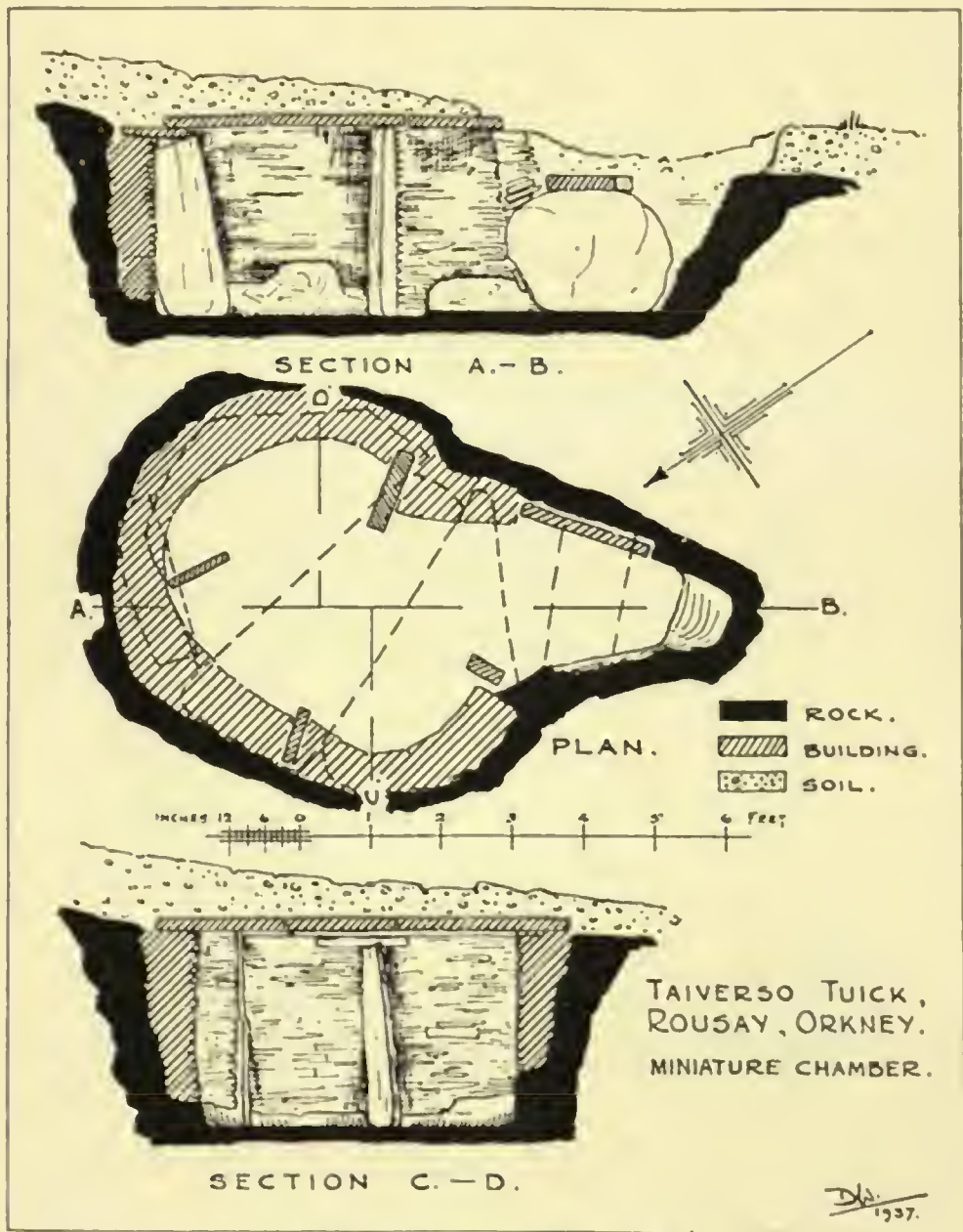


Fig. 3. Plan and Elevations of Miniature Chamber.

plan giving a horseshoe shape, but it runs up quite vertically from the floor in height. The floor, as previously mentioned, is flat and level and hewn out of solid rock, as is noted particularly between slabs 1 and 2, where the rock shows 5 inches to 9 inches above floor-level before building begins. The built walls, plumb from floor to roof, are constructed of the rock obtained from the quarrying of the chamber shape. As stated earlier in this report, these walls are of precisely and perfectly built masonry, and show as many as 39 stones in a height of 2 feet $7\frac{1}{2}$ inches, with a remarkably even face and a complete absence of any projecting or protruding stones. One of the roof slabs had fractured and dropped slightly in the centre, but otherwise the chamber was intact, clean and dry, and contained 4 vessels. The fact that the room was clean and dry should be particularly noted when it is recalled that the mouth or outlet of the trench or drain from the lower of the two chambers previously described is only some 2 feet from the mouth of the cell and 2 feet 6 inches above its floor. Of constructed or deliberate blocking there was no evidence, only a little debris and stone filling up the entrance proper.

THE RELICS.

The Upper Chamber had suffered so much disturbance that very little of its original furniture survived. But two flint implements, found

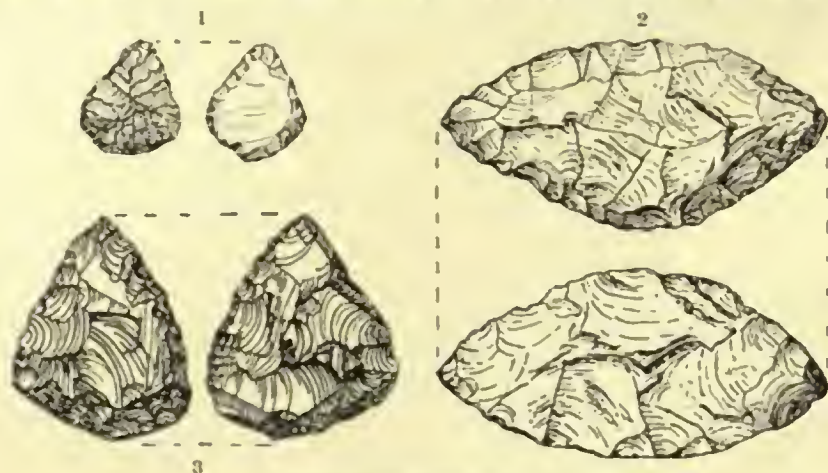


Fig. 4. Flint Artefacts. (1.)

on the floor, may be regarded as remains of the primary grave-goods. Fig. 4, 1, is a leaf-shaped arrow-head, broken at the point, and now 2 cm. long. It is worked on both faces, but only along the edges on the bulbar face. Both surfaces are mottled with an irregular white patina.

Fig. 4, 2, is a thick leaf-shaped point, 4 cm. long, made of unpatinated

black flint, trimmed on both faces. One edge has been straightened out, as a result of the removal of a small facet from the point. This flake, though resembling a graver facet in the manner of its detachment, has not left a graver edge and may not have been intentional. Along the base, part of the crust of the original nodule has been left on one face.

A third implement, fig. 4, 3, of yellowish chert, though found on the top of the broken-down wall of the eastern cell about 2 feet back from the face, may also pass as original. The bulbar face shows a number of broad, shallow, thinning flakes; the outer surface is trimmed only along the two edges. In a general way the implement is comparable to the flint knives from the stalled cairns of Midhowe and Yarso.

Near the inner end of the entrance passage, under blocking stones but 9 to 12 inches above the floor, were found 35 disc beads of greyish flagstone and a perforated pendant of pumice (Pl. LXVI, 3). These are the first stone beads to be recorded from a Neolithic chamber in Scotland, but after all do not differ essentially in form from the disc beads of "jet," frequently found in Early Bronze Age graves, including the cist built in the chamber of the long horned cairn of Yarrows in Caithness. The pumice pendant, 2.8 cm. long, 2.1 cm. wide, and 1.2 cm. thick, is also unique. The possibility cannot be excluded that the beads and pendant belong to the furniture of secondary interments in, or contemporary with, the "three stone kists" mentioned by Lady Burroughs.

A like suspicion applies in a still higher degree to some sherds found outside the door of the upper chamber. They are reddish in colour, and contain large grits and include part of a flat base and of a rim, possibly false. The flat-bottomed urn to which all presumably belong seems to have been built up in rings and bears a general resemblance to domestic pots, usually termed Iron Age in Orkney, but is not far removed from some of the thinner vessels from Rinyo. Finally, from a dump of material presumably removed by General Burroughs from the upper chamber come a calcined scraper on a split round nodule of flint, half a similar scraper not certainly calcined, and two rim fragments of a steatite bowl with a groove below the rim (fig. 5, 1). Two shoulder-blades of oxen were also found in the entrance passage.

From the *Lower Chamber* fragments of at least three urns and part of a human jaw-bone were recovered on removing one of the benches. All the recognisable fragments belong to carinated bowls of the familiar Unstan type. One is undecorated, but burnished, tool marks being visible on the surface (fig. 5, 2). The rim is thinned and slightly everted, giving a faint hint of



Fig. 5. Rims of Steatite Urn and of Neolithic Bowl. (1.)

kinship with the "Yorkshire bowls."¹ A second is decorated with oblique incisions alternating in the usual Unstan manner. On the third only two grooves parallel to the rim can be seen; it may well belong to the same urn as the fragment collected by General Burroughs and illustrated in *Proceedings*, vol. lxxv. p. 88, fig. 11, 1. Even so, adding the new rim fragments to those there illustrated, it appears that at least sixteen urns must have been included in the original furniture of this chamber.

A further fragment of the stone hammer, previously recovered from the passage into the chamber just outside the "barrier," was found on the dump from the General's operations, and permits of a restoration of the whole weapon (fig. 6). It shows that while the end first recovered expands like the butt of a Continental battle-axe, the opposite end neither expanded

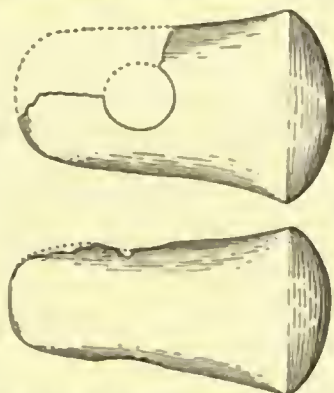


Fig. 6. Stone Hammer (completed). (1.)

nor tapered to a blade, but finished up rather in the manner appropriate to the commoner pestle-shaped mace-heads.

The *Miniature Chamber* outside the cairn contained two complete vases, while parts of two others were found, one in its entrance. No. 1 is a complete bowl of dark brown to black ware, with a corky appearance due to the decomposition of the grit temper. It is 15.7 cm. in diameter at the mouth and 10.3 cm. deep, the walls being 5 mm. to 9 mm. thick. An applied moulding runs right round the vase, giving the effect of a carination. The vase thus represents type D in Piggott's² classification of British Neolithic pot-forms. This form was hitherto unknown in Scotland. Vessels of the same general shape but substantially deeper and decorated in the Becharra style proper to South-Western Scotland and Northern Ireland do indeed come from Cletraval, North Uist.³ But closer parallels can be found in Southern England.⁴ No. 2 is a typical carinated bowl of Unstan type, 19.5 cm. in

¹ *Proc. Prehist. Soc.*, vol. lli. pp. 100-2.

² *Arch. J.*, vol. lxxxviii. p. 75.

³ *Proceedings*, vol. lxxv. pp. 522-3, HC 1 and VC 2.

⁴ E.g. *Antiquity*, vol. lv. p. 52, fig. 11, 26 (Whitehawk Camp).

diameter and 9 cm. deep. The neck is nearly vertical, the base sags heavily at the centre, precisely as in the bowl from the long stall cairn at Midhowe, Rousay. The neck is decorated with a single zone of patterns varying in panels. The zone is bounded above by a continuous incised

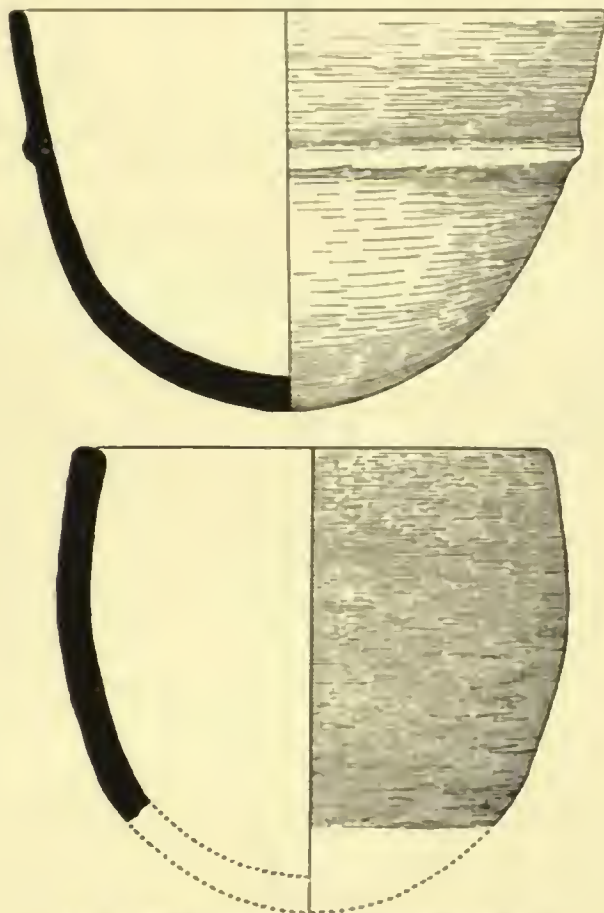


Fig. 7. Bowls 1 and 3 from Miniature Chamber. (1.)

line, and similar lines, either oblique or vertical, separate the panels. These incisions have been executed with a square-ended tool. The panels are mostly filled in with long stab-marks, made with the same tool and arranged in varying directions. Only in one panel are the stabs joined by "drags" to form continuous lines as in the classical Unstan decoration. No. 3, found at floor-level in the entrance, is part of a plain baggy pot of Piggott's form B, probably 13.5 cm. in diameter at the mouth and more than 10 cm. deep. The rim is plain, and no trace survives of the lugs

usually attached to vases of this shape. No. 4, found in the entrance, represents part of a keeled bowl without any decoration.

The group of vases from this intact chamber establishes the co-existence of typically North Scottish (Orkadian) Unstan bowls with classic

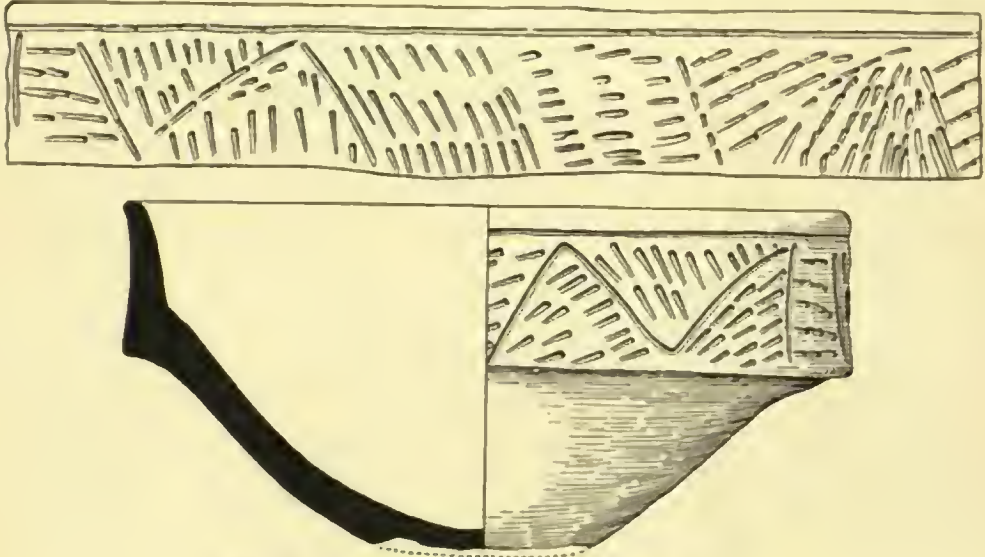


Fig. 8. Unstan Bowl from Miniature Chamber. (4).

forms of the Windmill Hill or British Neolithic A ceramic series. To this extent it justifies the contention that the culture of the chambered tombs of Orkney is a specialised variant of the more generalised Neolithic culture of these islands.

II.

EXCAVATIONS OF IRON AGE DWELLINGS ON THE CALF OF EDAY IN ORKNEY. By CHARLES S. T. CALDER, A.R.I.A.S., F.S.A.Scot.

In an earlier report to this Society on the excavation of some pre-historic constructions on the Calf of Eday,¹ I finished up with a brief note on a building which then had only been partly opened up and hurriedly examined. It was referred to as Structure No. 3, and the theory was propounded that it had been in use as a "Potter's Workshop" in the last stage of its occupation, which, according to Dr Callander's report on the pottery, was ascribed to the Iron Age. Last summer I revisited the site, and laid bare the whole of the structure along with the remains of several chambers, presumably later, which lay adjacent on the south-east. The result of this investigation enables me to produce a complete plan of all that remains (fig. 1) and to furnish a complementary account of the buildings.

Originally the "Potter's Workshop" was a dwelling, and though there has been little structural alteration, evidence of its later phase as a workshop presents itself in details here and there, such as the building of a secondary piece of walling or the spread of peat-ash over a layer of black earth accumulated on the original floor. It is suggested also by the pottery and the rude stone implements, all of which are assumed to belong to the later occupation. If some of these relics are earlier, they could not be distinguished from the rest as all exhibited the same coarse quality or rudeness of workmanship. Many of the implements lay immediately under the foundations of a still later wall or dike surmounting the mound,² others lay just below the grassy surface, and even on top of the ruined wall of the dwelling itself. The remainder, with pottery in great profusion, was found throughout the infilling of stones and earth almost down to the original floor. But in the disturbed and churned up state of the interior, due to earlier investigations, none could be grouped according to definite levels.

The first-mentioned building is roughly circular on plan (fig. 1), and measures from 38 feet to 41 feet in diameter. There is only one chamber contained within the wall, which, where best preserved, is from 7 to 8 feet thick,³ but the walling is much destroyed and its faces in many parts

¹ *Proc. Soc. Ant. Scot.*, vol. lxxl. pp. 115-54.

² *Proc. Soc. Ant. Scot.*, vol. lxxi. p. 110, fig. 2.

³ In the first report a maximum thickness of 14 feet 6 inches was stated, but this measurement is now found to include the size over a compartment built against the interior face and not then discovered.

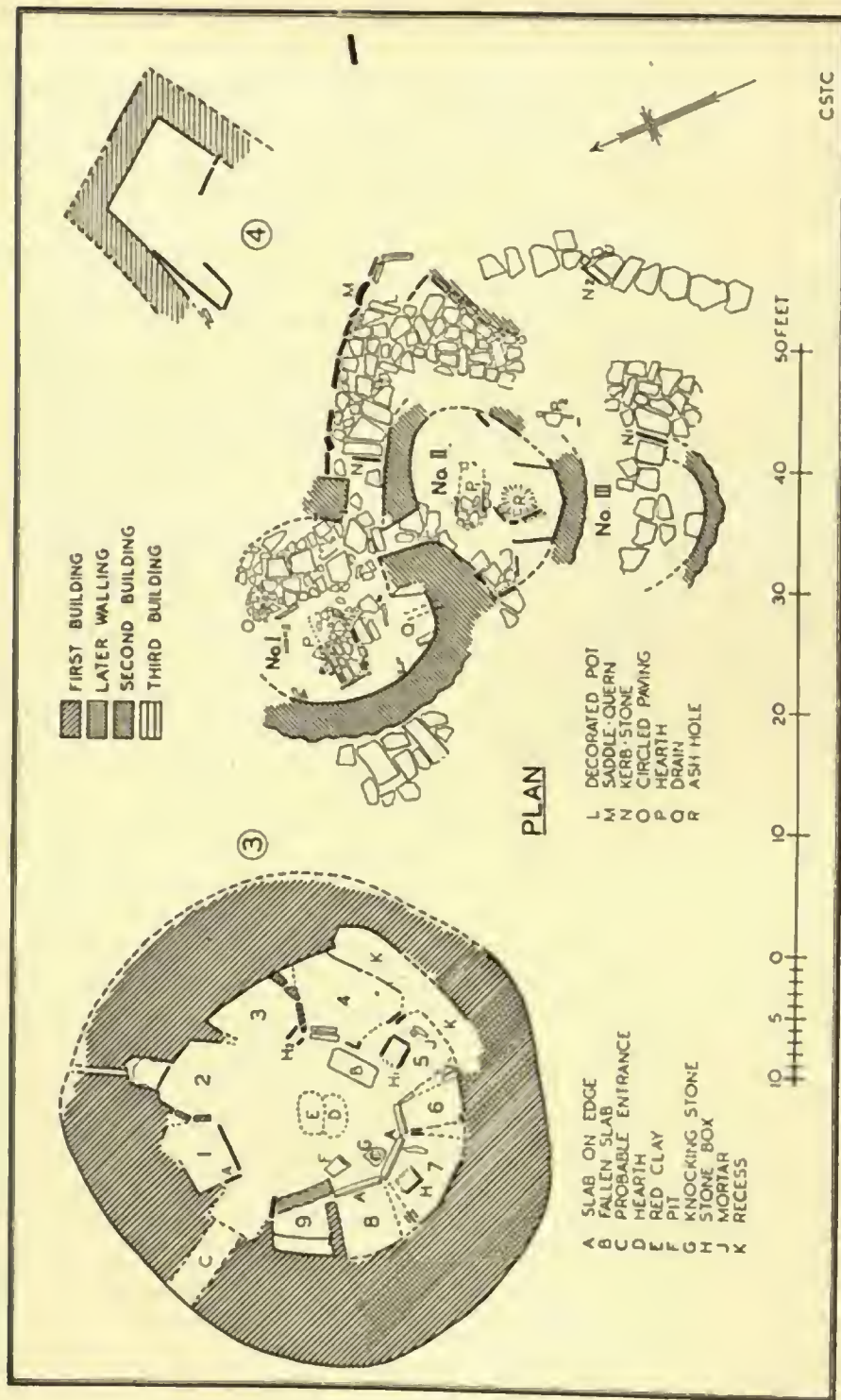


Fig. 1. Culf of Eday: Plan of the "Potter's Workshop" (Structure No. 3), later Iron Age Dwellings and Structure No. 4.

have disappeared altogether. Surviving portions on the outside do not exceed 1 foot 6 inches in height, and on the inside 3 feet 6 inches. The over-all diameter of the interior is some 24 feet 6 inches, but a series of nine small compartments, arranged round the wall-face, reduces this dimension to 14 feet 6 inches. These compartments, numbered 1 to 9 on the plan, are in a very dilapidated condition, but, from the evidence of stones remaining either set on edge or laid on bed, each has been separated from the other by radially set partitions. Four of them, Nos. 1, 6, 7 and 8, have been divided off from the central space by long low-set slabs (marked A in fig. 1), set on edge across the fronts of the compartments, and rising from 1 foot 3 inches to 1 foot 10 inches above the original floor.¹ These slabs are now loose and inclined inwards to the compartments. Another slab, B, which had fallen out of position, may have closed off Compartment 5. There is a suggestion of walling across the fronts of Nos. 3 and 4, and No. 9 has been entirely closed off by a wall obviously built in the later period. In general the compartments, which vary in size and shape, average about 5 feet 6 inches in breadth and from 4 to 5 feet 6 inches from back to front, with the exception of Nos. 4 and 6, which are respectively narrower and broader than the others. The placing of the slabs is reminiscent of primitive bed construction, especially in No. 1 Compartment, but certain features in others show that not all have been used for sleeping accommodation.

A narrow space, not closed in as a compartment, is left between Nos. 1 and 9, and this is the only conceivable part where an entrance to the chamber could have been situated, since the main wall is defined elsewhere by either an inner or an outer face. Dotted lines at C indicate the probable course of its penetration, but no distinct trace of the entrance was actually observed in the broken-down wall.

The central space and each compartment was very well laid with close-fitting paving-stones, the floors in the compartments being just slightly higher than that in the centre. An exception is made of the floor of Compartment 4, which was of clay, but it is thought that the paving here had been removed.

In the previous account mention was made of a pavement slab serving as a hearth, D, a quantity of red clay, E, a stone-lined pit, F, and a knocking-stone, G, all situated in the central area. Two recesses, referred to as R₁ and R₂, were also recorded, but in the light of the subsequent investigations these are now figured as Compartments 1 and 8. Two stones in the latter were then stated to be the stumps of upright slabs, but only one of them is so, and it probably formed part of a radial partition. The other, actually in Compartment 7, is now seen to be the side of a stone box, H, of which one end also remains, as well as its bottom, consisting

¹ *Proc. Soc. Ant. Scot.*, vol. lxxi, p. 131, fig. 13.

of several flat stones sloping from the sides to a level one in the middle. The box measured approximately 1 foot 8 inches long by 1 foot 6 inches wide, and from 6 to 10 inches deep, and it had been made perfectly water-tight by the application of clay-luting to the joints. Another of similar type, H_1 , but with only a single flat stone for a bottom, was sunk in the floor of Compartment 5. One end was missing, but the box had measured 2 feet 2 inches by 1 foot $9\frac{1}{2}$ inches and 13 inches deep. A very careful luting of red-tinged clay filled and covered the joints, and inside the box there was a large lump of yellow clay besides two rude stone imple-

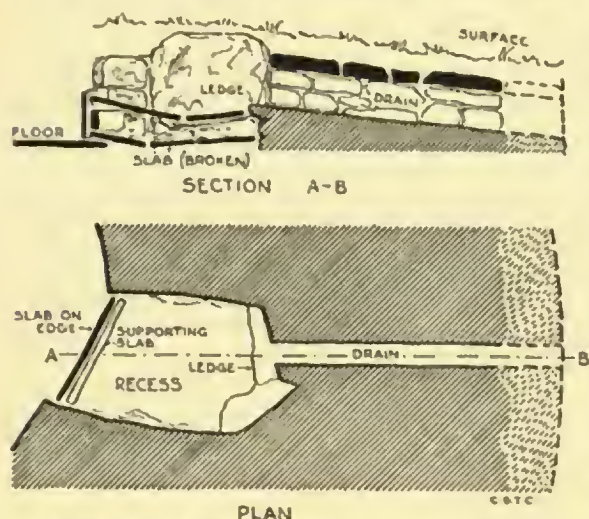


Fig. 2. Calf of Eday, "Potter's Workshop": Plan and Section of Recess in Compartment No. 2.

measures 2 feet 6 inches wide by fully 3 feet deep from front to back, and 1 foot $7\frac{1}{2}$ inches in height to the top of its broken-down walls (fig. 2 and Pl. LXVII. 1). The back is irregular in shape, and it possesses a rough ledge like a scarcement, $5\frac{1}{2}$ inches above the floor, from which level a well-constructed covered drain pierces the main wall. The drain is $7\frac{1}{2}$ inches high by 4 inches wide, and has a fall of 6 inches from inside to outside in its present intact length of 4 feet. Jammed across the front of the recess a thin slab, 10 to 12 inches high and $\frac{3}{4}$ inch thick, stood on edge on top of the paving which constituted the floor. Close behind it a lower thin slab on edge only 5 inches high, acted as a frontal support to a horizontal slab filling the recess in line with the scarcement, and seeming to have rested on a stone projecting slightly from each side wall. The horizontal slab had caved in to the hollow space left between itself and the floor. It had been fractured by the weight of well-built masonry, superimposed later but now removed, which filled the remainder of the

ments and some fragments of pottery. There was also a small quantity of yellow clay outside the box end, and just south of it two pieces of the same stone, J , reused on edge, were found to be parts of a broken bowl or mortar. Two ill-matched slabs on edge, H_2 , lying parallel to one another at the south front angle of Compartment 3, resemble the sides of a box, but may be nothing more than the lowest stones of a former partition across the front.

An outstanding feature in the main wall of Compartment 2 is a recess which

recess and covered the opening to the drain. The outlet of the drain being above the floor suggests that the recess had contained some form of a raised sink, but there was no sign of clay-luting anywhere to suggest a water-tight receptacle.

In the back wall of Nos. 4 and 5 there has been formed one or perhaps two large recesses measuring 3 feet 6 inches from back to front and having a bottom raised 1 foot 2 inches above the floor. Otherwise it is very much ruined and featureless. At the western corner of No. 4 a thin slab rising only 3 inches above the paving is earthfast on edge in the floor, and through it a hole of $1\frac{1}{4}$ inch diameter has been pierced as if for the attachment of a tether. A lump of prepared clay was found in the corner diagonally opposite. The face of the back wall of Compartment 9 is reduced to a height of only 1 foot above the floor, and at this level the edge of a broken shelf sticks out of the masonry. Three rude stone implements were found lying on the southern corner of this shelf.

Ashes from peat fires, already noticed to have covered a large part of the centre of the chamber and abundant in Compartment 8, were present in most of the other compartments on the east. In parts the ashes extended well over Nos. 5, 6, and 7 in a fairly regular layer from 1 foot to 1 foot 6 inches above the floor on which, in the space between, there was an accumulation of black earth. Amongst the ashes were pieces of calcined bone and bits of pottery, and it may be mentioned that a rim piece of the only shouldered vessel came from a point high up in No. 4 compartment, and two pieces of stentite vessels were picked up between Nos. 6 and 7, also high up (Pl. LXXI, No. 2, and fig. 4, Nos. 18 and 19).

In the first report on the pottery Dr Callander stated that an extraordinarily large quantity of this material, some 42 lbs. in weight, had been obtained. To that amount has now to be added another 28 lbs., which brings the total yield from this single chamber up to 70 lbs., and still further strengthens the idea that here was the workshop for its manufacture.

Lumps of pumice-stone, smoothed by rubbing, and probably used in the manufacture of bone tools, were again present in the ruins, and stone implements practically doubled themselves in number, while saddle-querns were more numerous.

A detailed list of the implements, in addition to those previously enumerated, is appended at the end of this paper. Altogether there is a formidable number, comprising, as represented by whole or broken relics, one knocking-stone, one bowl or mortar, six or seven boat-shaped saddle-querns,* six holed stones for tethers, fifty-seven various tools

* Since writing the above, Mr Edwards, Director of the National Museum of Antiquities of Scotland, has informed me that "sharpening stones" approximate very closely to small boat-shaped or saddle querns, so that some of the objects so described may really have served as sharpening stones.

including hammer-stones, pounders and club-like implements; eleven pot-lids or probable lids, twenty-three pieces of pumice-stone,¹ one stone with pecked-out cup-like hollow, and about one hundred and fifty unworked chips of beach-stones sometimes referred to as knives.² There were also two thin flat stones, notched at the sides (Pl. LXX, No. 6), which are almost identical in size and shape with objects of cetacean bone found at Foshigarry, North Uist.³ Many of the implements are somewhat similar to those found by Dr Curle at Jarlshof⁴ and at Wiltrow⁵ in structures definitely associated with the Early Iron Age. All these relics, therefore, like the pottery, may be assigned to this period; this agrees with the evidence of the original structure itself. The character of the building, with its radial partitions, is reminiscent of the pre-broch chambers of this type at Jarlshof,⁶ and also of the post-broch chambers at the same site, as well as of some of the Hebridean wheel-houses like that at Foshigarry.⁷

To judge from the examples at Jarlshof alone it will be apparent that structures with radial walls had been a common type of dwelling for several centuries, and a comparison of the plans (fig. 3) shows that the lay-out of the one on Eday most closely resembles that of the later post-broch buildings at Jarlshof. The main function of the radial partitions seems to be to achieve an increase of the floor space together with a reduction of the main span to more workable dimensions for roofing over in dry-stone. The lesser dome brought about by this method is an economy of both material and labour, and the radial walls, by acting to some degree as buttresses and bearing part of the weight of the roof, strengthen the fabric and relieve the main walls of much of the thrust that would otherwise be wholly imposed upon them.

So far as could be ascertained, the building was not structurally attached to any other, but only 7 feet away there are the scanty ruins of presumably later dwellings on the south-east (fig. 1). Their masonry is entirely different, the walls being thinner and of an inferior standard of workmanship, while radial walls are absent and there are no close similarities in structural features. Two periods of occupation are represented, the earlier being recognisable only by the remains of two hearths and portions of paved floors. Consequently what is seen on the plan is mainly

¹ *Proc. Soc. Ant. Scot.*, vol. lxx, p. 324. Forty-six pieces of pumice-stone were found in a dwelling at Foshigarry in N. Uist; *ibid.*, vol. xxiv, p. 401. Seven pieces of pumice-stone found at Howmae, N. Ronaldsay.

² *Ibid.*, vol. lxxii, pp. 266-7; *ibid.*, vol. vii, pt. 4, pp. 213-5.

³ *Ibid.*, vol. lxx, p. 397, fig. 1 (1).

⁴ *Ibid.*, vol. lxxvii, p. 97, fig. 13, Nos. 1 and 3; p. 107, fig. 22, Nos. 2 and 3; *ibid.*, vol. lxxviii, p. 234, fig. 7; p. 300, fig. 61; p. 308, fig. 66, Nos. 1, 2, 3, 4, 5, 8 and 9.

⁵ *Ibid.*, vol. lxx, pp. 159-161, figs. 7, 8 and 9.

⁶ *Ibid.*, vol. lxxviii, p. 224 ff.; p. 225, fig. 1, Chamber III, with compartments p. o, b, l and n.

⁷ *Ibid.*, vol. lxx, facing p. 356, pl. II, Chamber A.

the lay-out of the walling of the later occupation. To it belong at least a passage and three chambers, numbered I, II and III. The outline of each is incomplete as a result of spoliation of the walls, which have been reduced in height to only one or two courses or else have disappeared altogether. In many places the floors were only a turf in depth below the surface, and almost all the principal features have been swept away (Pl. LXVIII, 1). The outside wall-faces do not appear to have ever

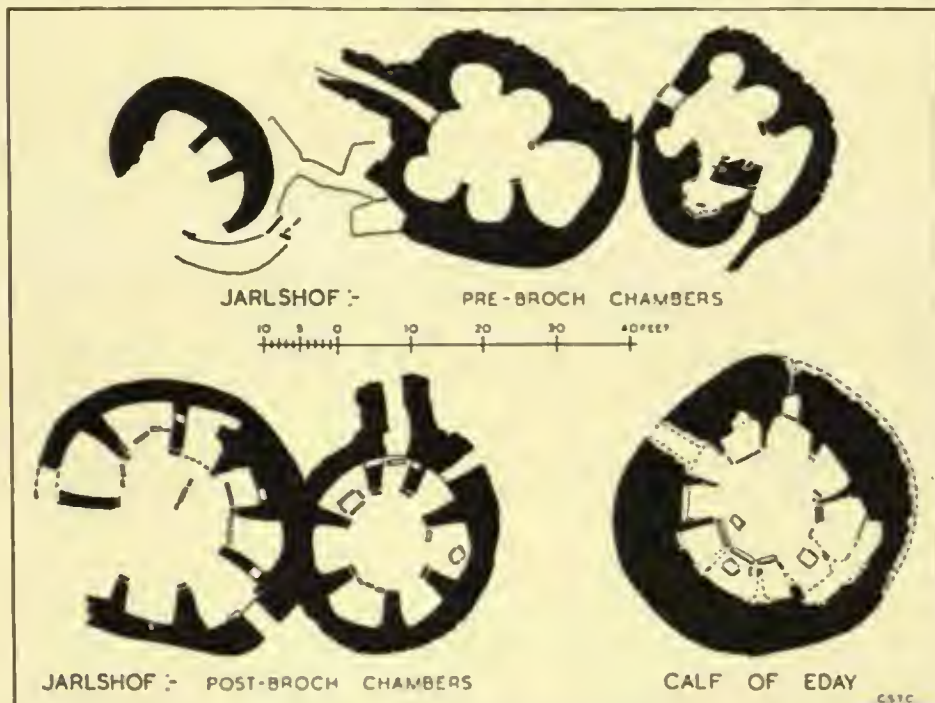


Fig. 3. Comparative plans of the "Potter's Workshop," Calf of Eday, and dwellings at Jarlshof.

been properly faced but to have been left rough and uneven. This condition tends to suggest that the lower courses at least had never been exposed but had been sunk into the debris of the earlier occupation, consisting of loose stones and black earth.

It is probable that the buildings had extended farther southwards where a grassy covering shows that the ground has been disturbed in contradistinction to the virgin growth of peat and heather surrounding it. Trenching in this area, however, yielded no satisfactory trace of actual building, although loose building stones and small burnt stones were everywhere met with.

The area occupied by the actual buildings measures some 50 feet by 40 feet. On the north-east it impinges on the low mound of Structure

No. 4, and on the north it extends into the hollow beside it.¹ The part next the mound is occupied by the passage which leads into Chamber No. 1, but it is much broken down, and the main entrance at its outer end was not found. The passage may have taken a course round No. II Chamber before returning north-westward to the door of No. I, where it measures 19 feet long in this direction by 4 to 5 feet wide. The whole has been paved with rough flags (Pl. LXVIII, 2), which rest on an accumulation of black earth, 8 to 10 inches deep upon the natural clay. In this layer of earth at a point marked L on the plan, the only decorated fragments of pottery with small pit-ornamentation were found, and also some pieces of prepared clay. The pottery, however, being under the paving could not actually be associated with the dwelling, and it may indicate an occupation still earlier than any that has been discussed. The wall on the north-eastern side of the passage was poor and consisted simply of a row of stones set on edge, which were backed by fine rich black earth and small burnt stones. The stones ranged from 1 foot 2 inches to 2 feet in height, from 1 foot to 2 feet 7 inches in breadth, and from $1\frac{1}{2}$ to 4 inches in thickness. One of them, M, had obviously been reused in this position, having originally done duty as a saddle-quern (Pl. LXVIII, 1). It stood on the line, face side outermost, and the oval hollow worn in it to a depth of 3 inches by rubbing was of large dimensions, occupying almost the whole of the face and measuring 2 feet 4 inches by 1 foot 7 inches, the stone itself being only 4 or 5 inches thick. When the loose earth was cleared away from the underside of this row of stones, it was seen that they rested on what appeared to be the foundation of an earlier wall. The other side of the passage was badly damaged, but the short length which remained showed that it had served also as the wall of No. II Chamber. The north-western end of the passage was of built masonry, 4 feet thick and now 1 foot 4 inches high. At a distance of 1 foot 9 inches in front of the doorway in it to No. I Chamber a kerbstone, N, 2 feet long, rises 3 or 4 inches above the floor of the passage. The doorway measures 2 feet 10 inches wide in front, and towards the back it widens by a cheek on either side.

No. 1 Chamber (Pl. LXIX, 1) was of roughly circular form on plan, and may be taken as having measured approximately 15 feet in diameter. Its outline is defined on the west by a curvilinear foundation of masonry only one or two courses in height, and on the north-east only by the edge of the paving of the floor. The ruined wall of the chamber, which lay partly underneath the rough foundation of the long wall mentioned in the previous report, measures 3 feet 3 inches thick to its very irregular outer face. Two paved floors, one above the other, were discovered in this chamber, the upper varying from direct contact with the lower to

¹ Structure No. 4, and hollow shown in *Proc. Soc. Ant. Scot.*, vol. lxxi, fig. 2, p. 116.

a matter of a few inches above it, the interspace being filled with black earth. The upper was on a level with the existing wall foundation, and in its northern sector a semicircular setting of paving stones, O, suggested a specially constructed floor for a feature, the ultimate shape and purpose of which remains unknown. The lower, and of course earlier, floor was mainly 6 inches below the level of the existing wall-foundation which rested on black earth containing small broken stones. The difference in these levels is well illustrated in Pl. LXIX, 1. In this floor, but not centrally situated in the chamber, there is a hearth, P, constructed of flat stones within a raised kerb (Pl. LXVII, 2). It has been oblong in shape, but its eastern end is broken and part of its kerb missing. Exact dimensions were not ascertainable, though it seems to have measured 6 feet 8 inches long by 2 feet 5 inches wide inside the kerb. At its two surviving corners a rounded beach-stone, hammer-like in appearance, has been sunk end on into the floor, and on either side of the hearth, at a distance of 1 foot 8 inches from these corners, there is a small socket-hole formed of stones set on edge. Each measures about 7 inches long and 5 inches deep and $2\frac{1}{2}$ inches and $4\frac{1}{2}$ inches wide respectively on north and south. These socket-holes had held the upright props to carry a horizontal bar for the suspension of cooking pots or for use as a roasting spit. A small angular stone found in each hole had no doubt been used to jam tight the prop which seems to have been made of Scots Pine (*Pinus sylvestris*).¹ since a large piece of charred wood of this variety was found lying beside the northern socket-hole. Hearths incorporating the features described above are noted in connection with the intrusive post-broch building in the interior of Midhowe² and at Gurness,³ both in Orkney, while another with kerb and rounded stone at the corners but without mention of socket-holes is reported (likewise in later work) from the Broch of Mousa in Shetland.⁴

A few small stones on edge, one or two projecting from under the foundations of the present wall, have belonged to some feature of the earlier construction, but are now of indefinite purpose. There is a very doubtful indication of a drain, Q, under the paving in the south side of the chamber. It starts near the hearth and runs southwards under the wall, the lowest course of which may here be part of an older wall.

From Chamber No. I a doorway connects with Chamber No. II on the south. It has no door-checks, but the straight faces of its jambs diverge from a width of 1 foot 10 inches at the front to 2 feet 9 inches at the back. The outline of Chamber No. II may be considered as being

¹ I am much indebted to Mr M. Y. Orr of the Royal Botanic Garden for his examination of this charcoal.

² *Proc. Soc. Ant. Scot.*, vol. lxxvii, p. 456, fig. 7 (10); p. 465, and facing p. 514, pl. vii.

³ Seen during visit. Broch to be described shortly.

⁴ *Proc. Soc. Ant. Scot.*, vol. lvi, p. 180.

roughly oval with axes of 13 feet and 11 feet respectively. Parts of its wall are entirely lacking, and those that remain are rough and irregular on the outside (Pl. LXIX, 2). The wall varies in thickness from 2 feet 2 inches to 2 feet 6 inches generally, but increases to as much as 4 feet 9 inches at the entrance, and at most it stands to a height of only 1 foot 4 inches. In this chamber only one paved floor was observed; probably it had been in use during both periods of occupation. Approximately in the centre there is a hearth, P_1 , similar to that in No. I chamber, but not in such good condition. It seems to have measured 6 feet long by 2 feet 2 inches within the kerb and the socket-holes, traceable at 2 feet 2 inches from its western end are incomplete. Immediately south-west of it three stones set on edge with packing stones at their bases follow part of the brim of a small shallow pit, R, which has been scooped out of the floor down to the natural clay. The pit was filled with peat ash and both it and the stones, which stand 12 inches above the floor level, have evidently been intruded into a slab construction with a paved bottom. The latter feature had been boxed out from the wall-face by two large thin slabs on edge set parallel to one another at a distance of 6 feet 3 inches apart. Each slab measures 3 feet 3 inches long, the westmost being 12 inches high and $1\frac{3}{4}$ inch thick, and the eastmost 1 foot 3 inches high by $1\frac{3}{4}$ inch thick. Originally this feature may have been a box-bed.

Chamber No. III is situated to the south-west of No. II, but has not communicated with it. The entrance is indicated on the south-east only by a stone kerb, N_1 , 2 inches high above a sill-stone which is all that remains of the doorway. Access to this chamber may have been gained off the passage, if the latter had extended this far southwards. Only a short arc of the wall, 8 feet in length, and only a course or two in its height of 1 foot 2 inches remain on the south-east, while its thickness (again to a rough outside) is about 1 foot 9 inches. The inside face of this wall is 10 feet distant from the wall of Chamber No. II, but the actual dimensions of the chamber itself cannot be ascertained. Two floor levels with a 6-inch interval between them were again represented by paving. Of the upper and later floor only the door-sill, already mentioned, and another slab projecting from under the foundation of the wall, were in position, and of the lower, only a few paving-slabs in the centre of the chamber. Chambers seemingly of a similar character have been recorded from Howmae.¹

Three stones on bed, one on edge and a slight indication of a socket-hole, all at a point marked P_2 , bear a faint resemblance to part of a hearth. But a hearth at this position and at this level must necessarily belong to a later construction of which there is no other trace. On the extreme south-east, at a distance of 11 feet from Chambers Nos. II and III, there

¹ *Proc. Soc. Ant. Scot.*, vol. xix, p. 24, fig. 7; *ibid.*, vol. xxiv, facing p. 450, pl. xvi.



1. The "Potter's Workshop," Compartment No. 2, with recess in back wall.



2. Hearth in Chamber No. 1 of the later dwellings beside the "Potter's Workshop,"
Calf of Eday.



1. General view from the S.E.

Note.—Saddle-quern built into wall of passage near the top right-hand corner.



2. Passage and door to Chamber No. 1.

Calf of Eday. Later dwellings beside the "Potter's Workshop."



1. No. I Chamber from N.E.

Note.—Hearth in lower floor below level of foundation-course behind.



2. No. II Chamber from S.E.

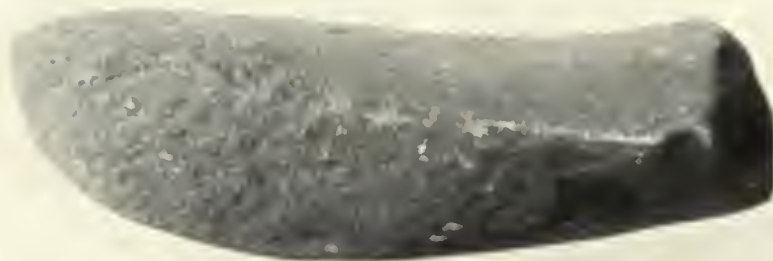
Calf of Eday. Later dwellings beside the "Potter's Workshop."



Calf of Eday: Stone Implements from the "Potter's Workshop."



1.—1. Pottery found under pavement of passage of later dwellings. (1.)
 2. Fragment of carinated vessel from the "Potter's Workshop." (1.)
 3 and 4. Stone Implements from the "Potter's Workshop." (1.)



2. Small Saddle-quern or Sharpening-stone from the "Potter's Workshop." (1.)
 Calf of Eday.

is a single line of paving-stones 14 feet long which terminates at its northern end in a course of three stones laid on bed and rising 6 inches higher than the paving. The face of these curves in a line westwards to a stone on edge, N₂, which has all the appearance of the kerb of a door. Probably it is that of the main front door which has led to the passage, and the line of paving leading to it reminds one of similar paving outside the walls of present-day crofts in Eday. Beyond this on the north there are more scattered paving-stones, but these, and also a roughly paved area with what looks like a short wall-foundation on the west of Chamber No. 1, are now unintelligible.

The investigation did not throw further light on Structure No. 4, which from its shape and position seems to be a later date than the others and of a different character. The low mound in which it lies has been formed chiefly by its own debris. Where it impinges on the passage and Chamber No. 1, however, the mound seemed to consist entirely of small burnt stones and rich black earth in its depth of two feet. This material was found inside the chambers and spread outside them, turning up practically everywhere in the grassy area where digging was undertaken. Beyond the fact that it proves the use of heated stones for cooking purposes, it is impossible to identify it with any particular one of the occupational periods on the site. Burnt stones and black earth are a feature associated with a structure in the island of Sanday,¹ and I have observed quantities of a similar nature in the brochs of Jarlshof and Skelberry in Dunrossness, Shetland, but more usually this material is accumulated in isolated mounds.

Pottery and rude stone implements were scarcer in the dwellings than in the "workshop." The former was of a thinner variety and of a harder texture, but the latter were of equally rude manufacture, and in some cases of much the same pattern. Small flint scrapers, cores, and flakes, not referable to any particular occupation, were recovered from the infilling in all chambers, and some even outside the dwellings. Similarly, cores and flakes or scrapers of quartz, as at Wiltrow, and various pebbles were found, and not a few "hailstones" both whole and broken. The nature of the soil was not conducive to the conservation of bone relics, only one such—a pin—being picked up. Lamps of rounded and smoothed pumice-stones of various sizes, however, bore evidence, presumably, of the manufacture of bone implements. In addition to the pottery, noted further on, the finds included:

A beach-stone, shaped like a pointed oval and flattened on one side, with part of one end broken off; it measured $6\frac{1}{2}$ inches long by $3\frac{1}{2}$ inches wide and $1\frac{1}{2}$ inch thick, and was probably a quern-rubber. Half of a similar object of sandstone, 6 inches by $4\frac{7}{8}$ inches and $1\frac{5}{8}$ inch thick. A beach-stone, abraded at both ends and one side, which had been used as a hammer

¹ *Proc. Ork. Ant. Soc.*, vol. viii, pp. 55-6.

and measures $6\frac{1}{4}$ inches by $2\frac{1}{8}$ inches and about 1 inch thick. Another, slightly curved naturally and narrowing in its length towards one end which is abraded, 7 inches long and $2\frac{1}{2}$ inches by $1\frac{1}{2}$ inch at the thick end and $1\frac{1}{8}$ inch by $\frac{5}{8}$ inch at the other. A beach-stone hammer or pounder, roughly cylindrical in shape with a flattish side and abraded at both ends, 6 inches long and $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches on the axes. Another, probably of chert, irregularly shaped and abraded at one end, measuring $3\frac{1}{2}$ inches long and $3\frac{1}{2}$ inches by $2\frac{1}{4}$ inches thick. A rough implement of somewhat trapezoidal shape with a sharp edge all round made by chipping on both sides, $6\frac{1}{4}$ inches long by $4\frac{3}{4}$ inches and 3 inches at the respective ends and $1\frac{1}{4}$ inch thick. Another of sandstone, chipped as above to an oblong shape with rounded corners, 7 inches by 6 inches and $1\frac{1}{4}$ inch thick. Another as above but with rough flat sides chipped to blunt edges, 9 inches by $4\frac{1}{2}$ inches and $1\frac{1}{8}$ inch thick. Another similar but measuring $7\frac{1}{2}$ inches by $3\frac{7}{8}$ inches and $1\frac{1}{2}$ inch thick.

The last two are especially like the type of implement found in the "Potter's Workshop," as illustrated in Pl. LXX, No. 1.

A knife or cleaver of sandstone which was found in an isolated position, probably came from the dwellings. It measured $9\frac{1}{2}$ inches along a flat back and $4\frac{3}{4}$ inches across the widest part of the blade, which is curved from a point at one end to a handle, 3 inches wide at the other. One side of the stone was flat and the other rounded and chipped to a cutting edge.

Thirteen flint scrapers, twelve cores and many small pebbles and flakes of flint.

Five large and fourteen small pieces of broken "hailstones."

One piece of quartz, roughly $1\frac{7}{8}$ inch by $1\frac{5}{8}$ inch and up to $\frac{3}{4}$ inch in thickness, with one face smooth apparently by use as a polisher.

One large core of quartz measuring roughly 4 inches by $3\frac{1}{2}$ inches by 3 inches.

Sixteen small cores and chips of various kinds of stones.

Nine rounded pieces of pumice-stone.

One bone pin, $2\frac{1}{8}$ inches long and $\frac{1}{8}$ inch thick.

Almost in continuation of the grassy area in which the buildings are situated there is a smaller patch which extends for about 20 yards from the south-eastern side of the long cairn nearby, with a width of some 10 yards. Removal of the turf in the middle of it revealed stones of a size and appearance indicating that a building of some sort had formerly existed, but no actual walling was observed. A beach hammer-stone, abraded at both ends, was picked up out of the debris. It was roughly oval in section and measured $4\frac{1}{2}$ inches long by $2\frac{1}{2}$ inches in greatest thickness.

Clinging to the underside of a sod dug up there was a very fine small

flint arrow-head or borer measuring $\frac{7}{8}$ inch long and $\frac{11}{16}$ inch at its wide end. The back half of it was semicircular in shape, and the front half was thinned down to a fine point by two concave sides. The edges of the concavities were worked on alternate faces like an engineer's countersinking drill.

Appended below is the list of rude stone implements complementary to those previously found in the "Potter's Workshop."

A stone bowl or mortar, already mentioned, the cavity formed by pecking, and measuring 6 to $6\frac{1}{2}$ inches in diameter and 4 inches in depth.

Part of another, or more probably a saddle-quern, with shallow concave surface covered with small pit markings, the concavity judged to have measured 1 foot in diameter and over 2 inches in depth. A boat-shaped saddle-quern, pecked on upper and under surfaces, $10\frac{1}{2}$ inches long by $5\frac{1}{2}$ inches wide on concave face and 2 inches thick. Another, with a small piece broken off one end, upper surface smooth, under surface pitted, $8\frac{1}{2}$ inches by $4\frac{3}{4}$ inches by $2\frac{3}{8}$ inches (Pl. LXXI, 2). Another, with one side and one end broken, upper surface pitted and under surface rough, 9 inches by 4 inches by $2\frac{3}{4}$ inches. The larger part of another, upper surface pitted and under surface roughly smoothed, $6\frac{1}{2}$ inches by 4 inches by $2\frac{1}{4}$ inches (*cf.* footnote, p. 171). The above are all made of sandstone.

A beach-stone, flattened on one side and somewhat hog-backed on the other; it measures $5\frac{3}{8}$ inches by 3 inches by 2 inches thick, and has probably been used as a quern rubber. A rounded beach-stone 1 foot 7 inches by 7 inches on the axes and $2\frac{1}{8}$ inches thick, pierced at one end with a biconical perforation measuring $2\frac{3}{4}$ inches in outer diameters, but contracting towards the middle, and probably used at the end of a tether. Three fragments of beach-stones with evidence of similar perforations. A large beach-stone pounder, abraded at one end and broken at the other, oval in cross-section and narrowing towards the ends, 8 inches long by 3 to 4 inches on the axes. Another, roughened all over and pitted by hammering on ends and side, oval-shaped in elevation and section, $6\frac{1}{8}$ inches long by $2\frac{1}{2}$ to $3\frac{1}{2}$ inches on the axes. A third, finely abraded at both ends, oval in cross-section, also $6\frac{1}{8}$ inches long by $2\frac{1}{2}$ to $3\frac{1}{2}$ inches on the axes. A fourth, abraded at narrower end only, irregularly cylindrical, 6 inches long and $2\frac{1}{2}$ inches in greatest diameter. A rough spherical hammer-stone abraded all over, $2\frac{7}{8}$ inches in average diameter. A fine implement of oval section, pointed at both ends mainly by pecking, and one end later smoothed by use, $10\frac{3}{4}$ inches long and $2\frac{3}{4}$ inches by 2 inches on the axes at greatest. Another similar tool but of flatter section and pointed only at one end, formed mainly by chipping but pecked on one side of pointed end and rubbed smooth by use on the other side, also $10\frac{3}{4}$ inches long and $2\frac{3}{4}$ inches by $1\frac{1}{4}$ inch thick. Found with the one above on corner of shelf in No. 9 Compartment (Pl. LXX, No. 2). An elongated

club-like implement, flattened by fracture on one side, narrowing at one end and abraded at the other, $9\frac{1}{4}$ inches long by $2\frac{7}{8}$ inches in diameter at one end and $1\frac{3}{4}$ inch in diameter at the other. An oval-shaped implement made by chipping a flat beach-stone almost all round on both sides but one end left untouched, 11 inches by $6\frac{1}{4}$ inches on the axis and $1\frac{1}{2}$ inch thick (Pl. LXX, No. 7). A pear-shaped pot-lid, made by chipping, 12 inches by 9 inches by 2 inches. A circular pot-lid, $3\frac{7}{8}$ inches in diameter and $\frac{3}{4}$ inch thick. An oval pot-lid, $5\frac{1}{2}$ inches by $4\frac{1}{4}$ inches on the axis and 1 inch thick. A flat chipped stone like an oval pot-lid, $6\frac{1}{4}$ inches by 4 inches and $\frac{3}{4}$ inch thick. A flat stone, double-notched on each side, 10 inches long, 4 inches wide at a straight end, 5 inches wide at a curved end, and $\frac{5}{8}$ inch thick (Pl. LXX, No. 6). Another, single-notched on each side, 8 inches by $3\frac{1}{2}$ inches and 1 inch thick. A flattish cleaver, made by chipping, with notched shoulder under handle, which is broken off, 7 inches long by 4 inches wide by 1 inch thick. The half of a bulbous head, probably of a club, made by pecking, broken at the neck, 5 inches long and bulb $3\frac{1}{2}$ inches in diameter (Pl. LXXI, 1, No. 3). The pointed end of a pick-like implement of roughly oval section, made by chipping, $8\frac{1}{2}$ inches long by 4 inches and $2\frac{1}{2}$ inches on the axes (Pl. LXXI, 1, No. 4). A large flat implement made by chipping with one rounded end left smooth and untouched, the other end wider and obtusely pointed, 13 inches long, $4\frac{5}{8}$ inches at one end and $3\frac{1}{2}$ inches at the other and $1\frac{1}{2}$ inch thick (Pl. LXX, No. 5). Another of the same type but smaller, $9\frac{5}{8}$ inches long by $5\frac{1}{2}$ inches at widest and $3\frac{1}{2}$ inches at rounded end and $1\frac{1}{8}$ inch thick. A somewhat similar implement, also made by chipping, one end rounded and flatter end untouched, $10\frac{1}{4}$ inches long by $4\frac{1}{4}$ inches and $1\frac{1}{2}$ inch thick (Pl. LXX, No. 4). Another, more rectangular in shape and flat oval section, made by chipping, $7\frac{1}{2}$ inches long by $3\frac{1}{2}$ inches and $1\frac{1}{2}$ inch thick. A fine flat leaf-shaped tool made by chipping and found in the stone box in Compartment No. 5, 9 inches long, 3 inches at widest and $1\frac{1}{8}$ inch at thickest (Pl. LXX, No. 3). A flat implement, made by chipping, wider at one end than the other, $8\frac{7}{8}$ inches long, 3 to $3\frac{7}{8}$ inches wide and $1\frac{3}{8}$ inch thick. Another, somewhat leaf-shaped, pointed at one end and square at the other, $9\frac{1}{2}$ inches long by $4\frac{1}{4}$ inches at widest and $1\frac{3}{4}$ inch thick. An implement made by chipping, flat at one end and square at the other, $8\frac{1}{4}$ inches long by 4 inches wide at working end and $1\frac{1}{4}$ inch thick. The thin end part of another, $7\frac{1}{2}$ inches long by $3\frac{3}{8}$ inches across the broken end and $2\frac{1}{4}$ inches at narrower and rounded end and $1\frac{1}{8}$ inch thick. A stone knife, flat and made by chipping, the back straight and the edge curved, like a segment of a circle, 7 inches long by $3\frac{1}{2}$ inches at widest and $\frac{3}{4}$ inch at thickest. A knife-like implement made of a split beach-stone with straight back and rounded cutting end, chipped round edge of smooth

water-worn side, $8\frac{1}{2}$ inches by $4\frac{3}{4}$ inches at widest and 1 inch thick. A flat implement made from a beach-stone, chipped on each side and on the edges for half the length, 8 inches long by $5\frac{1}{4}$ inches wide and $1\frac{3}{8}$ inch thick. A pointed implement, rounded and thinned at one end and increasing to a rectangular section at the other which is broken, $9\frac{1}{4}$ inches long by $2\frac{3}{4}$ inches wide and $2\frac{1}{8}$ inches thick at the broken end. A very rough flat implement, made by chipping all over, flat pointed at one end, the point suggesting a borer for making or enlarging holes, $8\frac{1}{4}$ inches long by 4 inches and $1\frac{1}{8}$ inch thick. A heavier rough implement made by chipping all over and measuring 9 inches long by $4\frac{1}{2}$ inches wide at one end, $2\frac{3}{4}$ inches at the other and up to $1\frac{5}{8}$ inch thick. A spatulate implement made by chipping, blunt pointed at one end and squarely broken across the other, $7\frac{1}{2}$ inches long by $5\frac{1}{4}$ inches wide and 1 inch thick. Another, similarly broken, made from a flat beach-stone chipped more round the edges only, $5\frac{7}{8}$ inches long by 4 inches wide and $1\frac{1}{4}$ inch thick. Two broken pieces of club-like implements, one made by chipping and one finished by pecking. A beach-stone, worked by chipping at one square end only but may have been smoothed at the other end, which is pointed, is axe-shaped, and measures $5\frac{5}{8}$ inches long by $2\frac{1}{2}$ inches wide and 1 inch thick. Seventy or eighty stone chips (Skaill knives), bringing the total to about one hundred and fifty. A stone with a small pecked-out hollow on one side made of a rounded beach-stone, 5 inches in diameter, by 3 inches thick. A core of quartz chipped almost all over, 4 inches by 3 inches by 3 inches roughly. A few flakes of flint. Fifteen pieces of pumice-stone of various sizes, with signs that they had been smoothed and rounded by rubbing.

A small perforated bead of blue-coloured patinated glass was found just under the surface turf. The sides were flattened.

Twenty feet east-south-east of the "workshop" a large isolated saddle-quern lay on the surface of the ground. It measured 2 feet by 2 feet and 10 inches thick, and the oval hollow surface measured 1 foot 9 inches by 1 foot 2 inches and $2\frac{3}{8}$ inches deep.

Beside it there was a rounded beach-stone, 4 inches in diameter and $1\frac{3}{4}$ inch thick which was broken in half. On its flatter side a cavity had been pecked out measuring $2\frac{1}{2}$ inches in diameter and $\frac{7}{8}$ inch deep.

From the same spot came a nicely rounded sea-worn sandstone hammer, abraded at both ends and pitted slightly on the side. Cylindrical in shape, it measured 5 inches long by $3\frac{3}{4}$ inches in diameter.

I have to acknowledge my indebtedness to Major Harry H. Hebden, M.C., of Carrick House, for his continued interest in the excavations, to Miss Margery I. Platt, M.Sc., for her Report on the Animal Bones, to Mr R. B. K. Stevenson for his assistance in examining and reporting on the

pottery, and finally to the workmen for their keenness and pains-taking care.

REPORT ON THE POTTERY. BY ROBERT B. K. STEVENSON,
M.A., F.S.A.Scot.

"Potter's Workshop."

Sherds previously found in the "Potter's Workshop" were described by Dr Callander in *P.S.A.S.*, vol. lxxi, p. 147. Of the recently discovered sherds (fig. 4), mostly buff or red except where blackened, which show additional features, that illustrated as fig. 4, 10, has been left rough on the inside so that a large number of small stones protrude (*cf.* Pl. LXXI, I, No. 1), as they do also on part of the outside where the smoothing skin, possibly a true slip, has flaked off. In texture this sherd would be undistinguishable among the sherds from Rinyo; as would the rather finer and quite well smoothed fig. 4, 8, which shows how the strips of which it is made each mortice into the centre of the strip above, a feature that may also go to prove the long continuity of simple ceramic traditions in Orkney. Fig. 4 (9, 12, 13) show the common simple rim once more; 14-16 are examples of pots slightly thinner than the majority, but of similar quality. Some of the rims are flattened, a feature noticeable in some of the thicker rims previously published, and further exemplified by fig. 4, 11, which had been burnished. Fig. 4, 17, which is also flattened, is of quite a different texture from the rest, the body being rather smooth and free of stones. It is soft and more noticeably micaceous than the others. Fig. 4, 1-7, show bases with various profiles. Fig. 4, 4, which shows the lower building stages, is just as gritty as the other bases, but harder and well smoothed. The most important sherds are, however, those illustrated by fig. 4, 20 and 21. They belong to light brown or grey carinated bowls, or possibly one bowl as the rim diameter of both is 9 inches. They resemble closely the shapes introduced into Jarlshof at the second period of Dwelling III, and continuing in its third period. At Jarlshof this marks the beginning of the Iron Age. These Eday sherds are quite different in texture from the others just described, but are not unlike some of the Jarlshof sherds with very little steatite temper. The carination of fig. 4, 21, has been squeezed out to make it more prominent. The smoothing of the surface is so good as to be almost burnishing.

Fig. 4 (18, 19) show rims of steatite vessels.

Dwellings beside "Potter's Workshop."

Below the pavement of the passage at the point marked L on the plan (fig. 1) were found pieces of a pot closely resembling fig. 4, 10 (Pl. LXXI, I, No. 1). Some of its outer surface had flaked off in the same manner, and the

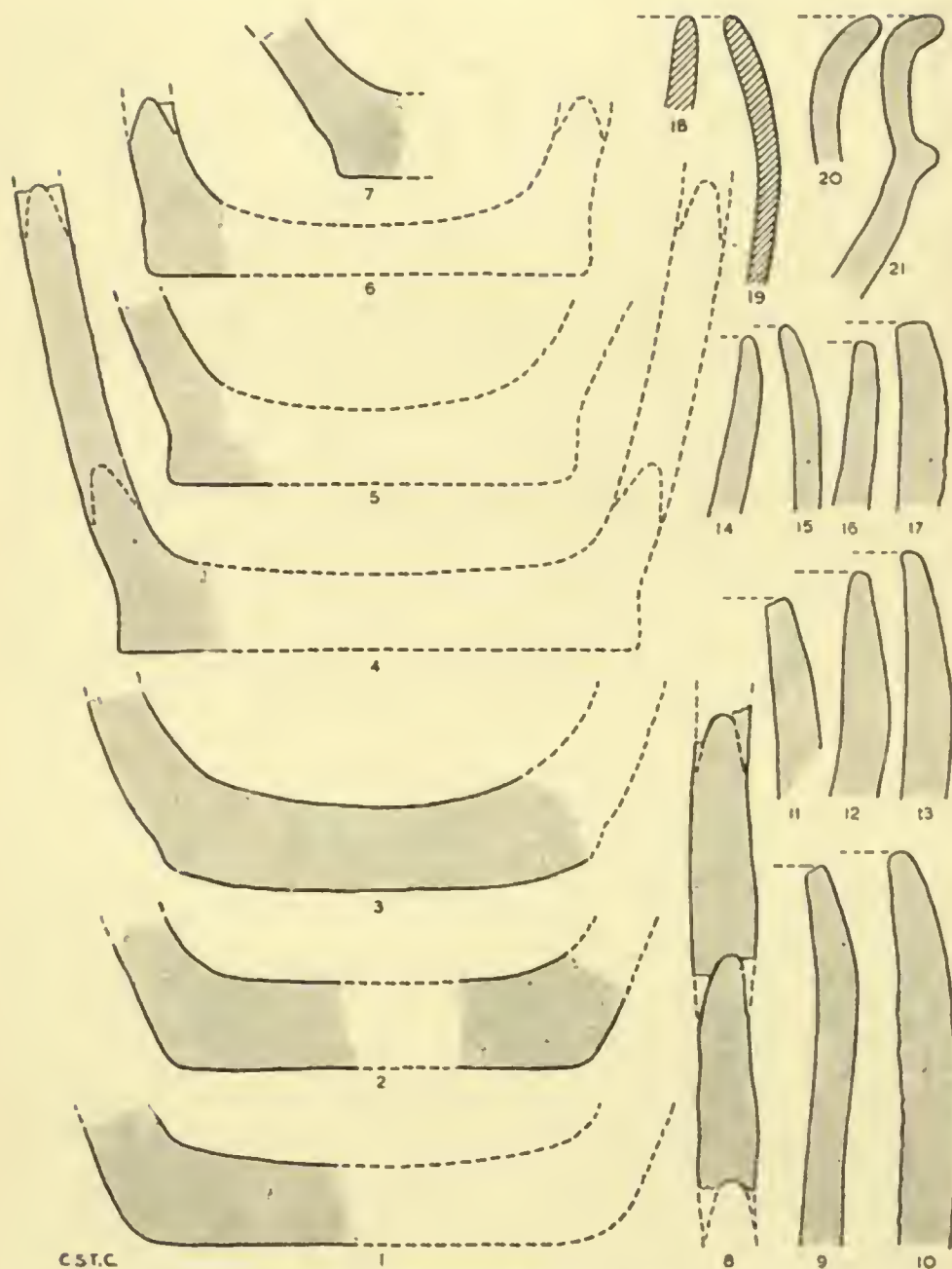


Fig. 4. Calf of Eday: Sections of Pottery Vessels from the "Potter's Workshop." (4.)

grits protruded on the inside. Part of the exterior is plain, but part has been decorated in a most unusual manner, by close-set dimples made with a rounded point. There seem to be no very relevant parallels, although pitting is prominent at All Cannings Cross.

From the dwellings to which the pavement belonged, and thus later than the dimpled sherds, and so presumably later than the sherds from the "Potter's Workshop," too, the pottery is completely different (fig. 5). It is more like that described by Dr Callander from Chamber B of the

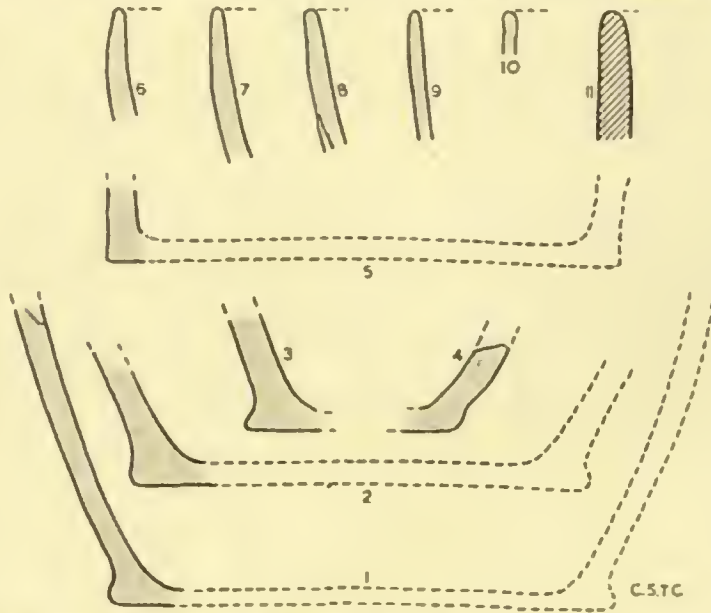


Fig. 5. Calf of Eday: Sections of Pottery Vessels from the Later Dwellings beside the "Potter's Workshop." (1.)

adjacent stalled cairn. But it lacks the surface finish, the rims are not everted (6-10), and the bases (1-3, 4) have a marked external concavity, while 5 has a nearly vertical side. So it all must be considered quite distinct. The thin walls are hard and sandy to the touch, and contain virtually no grit except for some particles of quartz. The colour is dark reddish brown to black outside, and black inside. The most complete base has vertical streaks caused by some smoothing implement inside and out.

Fig. 5 (1, 4 and 8) show traces of building-joints.

Fig. 5, 11, is a rim of steatite.

REPORT ON THE ANIMAL BONES. By Miss MARGERY I. PLATT,
M.Sc., Royal Scottish Museum.

Structure No. 3, "Potter's Workshop."

The remains here comprised part of a cannon and axis vertebra of a sheep. In addition was the proximal articulation of the tibia of a red deer (*Cervus elaphus Scoticus*, Lönnberg).

Buildings beside "Potter's Workshop."

Ox relics were most numerous here, and included part of the upper jaw with teeth, a fragmentary rib and scapula, cannon and phalanx bones, a fragmentary pelvis, tibia and distal articulation of a humerus. Both young and mature animals were represented. There were also a few molar teeth of an adult sheep, a pig's canine, and part of the rib of a dog. The only avine remains were a femur and two coracoids of cormorant (*Phalacrocorax c. carbo* (L.)) of widely differing sizes.

III.

THE GALLERIED DÙN AT KILDONAN BAY, KINTYRE.

By H. FAIRHURST, M.A., F.S.A. SCOT.

On the landward side, the old kingdom of Dalriada and its modern counterpart, Argyll, present to the outside world a rugged mountainous aspect in the massifs around the head of Loch Long and of Loch Awe, and around Glen Coe. But within these bastions there is a land of lower elevation, of long inlets, peninsulas, and islands, where the relief, though rugged, is on a smaller scale. It is a less repellent country from the point of view of human settlement, and one of great natural charm. Main roads and railways and the traffic going down from the Clyde pass this region by, and at the present time it has an air of remoteness which is surprising in view of its close proximity to the densely populated Lowlands near Glasgow. In early times it was quite otherwise, for from the Mull of Kintyre to the Glens of Antrim there is a channel not 15 miles wide, and our region was in close contact with Ireland. By reason of its position, its mild climate, its sheltered valleys and inlets, it seems to have offered an attractive home to early settlers, and for the archaeologist it is indeed a happy hunting-ground.

Kintyre is a characteristic sub-region: it is an island except for a narrow isthmus between East and West Loch Tarbet, but it is best

considered as an incomplete bridge on the way to and from Ireland. It is hilly, but rarely rugged; the interior is mainly moorland, but the raised beaches and the narrow coastal districts are mild and sheltered, and have attracted settlers from Atlantic times onwards. The archaeological sites are numerous, and, in view of the close connection with Ireland, may prove to be of great significance.

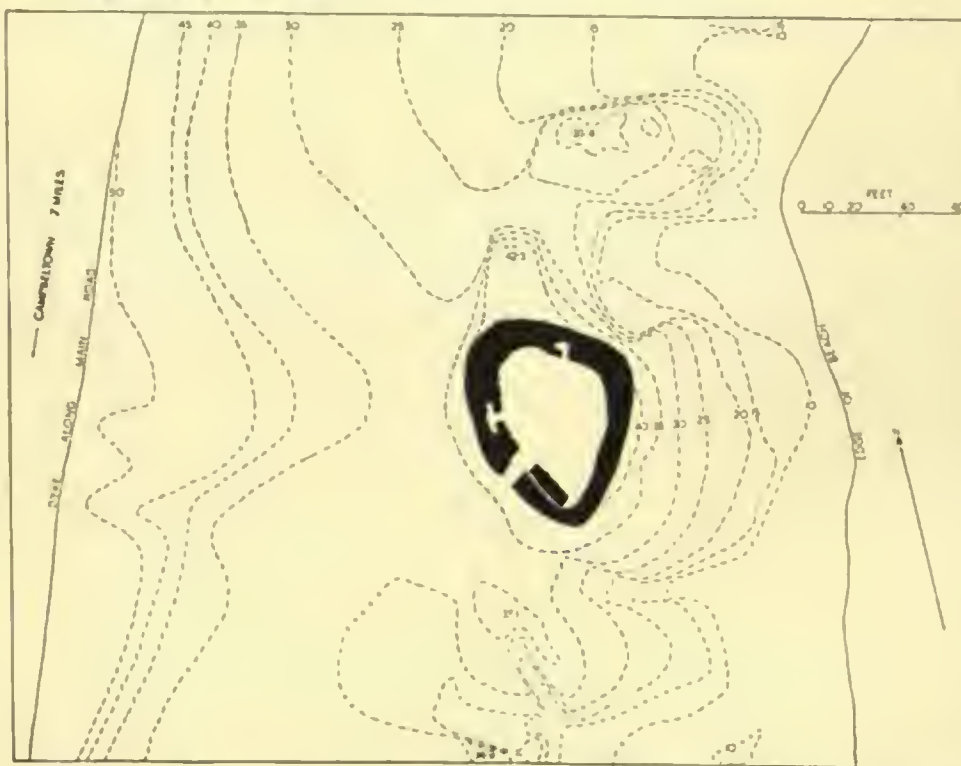


Fig. 1. Map 1.—The immediate surroundings of the Kildonan Fort, drawn from data compiled by Dr J. Orr (heights in feet above Ordnance Datum).

Upwards of sixty forts of various types have been located within Kintyre,¹ most of them in close proximity to the sea. Three of these, all marked on the 1-inch Ordnance Survey Map, are to be found on the shores of Kildonan Bay,² on the east side of the peninsula and some 7 miles north of Campbeltown. The coast here is rather low and rocky, but from the head of the Bay the land rises rapidly to Sgreadan Hill (1298 feet) 2½ miles away. The northern side of the inlet is formed by Ugadale Point, on the extremity of which stands a small ruinous stack fort; the southern side, half a mile away and opposite the farmhouse of Ballochgair, consists of

¹ Information from Mr J. R. Cunningham, Askomil End, Campbeltown.

² Misspelled "Kildonah Bay" on the Ordnance Survey Maps.

another rocky point, which is the site of another fort of large dimensions and once enclosed by a single rampart, now very ruinous. At the head of the Bay, below the 50-foot contour, the ground is broken into a series of crags and hillocks of mica schist, separated by deep clefts and gullies, the whole being overgrown with whin and bracken, grass and nettles. Upon one of the largest of these crags or hillocks, at a height of about 40 feet above sea-level, stands the Kildonan fort (Pl. LXXII, 1).

The hillock rises steeply from the water's edge (see fig. 1) and then the ground falls again on the landward side more gently to a great bed of yellow irises, only to rise again after 20 or 30 yards to a terrace and then a hill slope which obstructs the view on this western side. To the south the land is more open, but on the north there is a series of crags and clefts, which again drastically restrict the view. For an attacking party there was cover to within a stone's throw on the north, but the immediate natural defences were strong. Only to the west does the ground fall away gently from the top of the hillock, for on the south and seaward slopes the approach is steep and rocky, while on the north it is precipitous. Part way down this latter slope there is, incidentally, a small natural cave half-filled with fallen rock.

Before excavations commenced, traces of a single stone rampart, built of local mica schist, could be seen surrounding the top of the hillock amid the debris and undergrowth (see fig. 2). It appeared to be from 10 to 15 feet thick, and to enclose a heart-shaped area measuring some 63 feet along the major north-south axis, and 42 feet at the maximum at right angles to this. The enclosure was a saucer-shaped hollow, with banks of debris along the inner face of the rampart, thickly overgrown with bracken, briar, and nettles, but with signs neither of hut-circles nor of interior walling. The outer face of the rampart showed clearly along the seaward side, and rose at one point to a height of 6 feet; two great holes had been dug into the rampart on this side in the recent past, and had spoiled the appearance of the monument. On the other three sides the outer face could not be followed except in two short stretches. The inner face was quite obliterated on the east and south, but was easily followed on the west and north, where it showed sometimes for a course or two, sometimes as a steep grassy bank, and in one stretch in the north stood 5 feet high as a well-constructed face. The entrance was obviously located in the south-west sector of the rampart, where there was a marked depression, through which led a modern path, and two short lines of stones indicated the position of the passage walls. On the south side of this depression another great hole had been dug into the rubble core of the rampart (probably in search of a lost ferret) and had exposed a large horizontal flagstone with suggestions of walling on either side, as though there had been a gallery or cell within the rampart. Five feet to the south

of this, the top of an outward facing wall appeared above turf-level for a distance of 6 feet, and presumably formed the continuation of the cell or gallery opening into the entrance. In the north-east sector of the rampart there were the remnants of a small oval cell similar to those

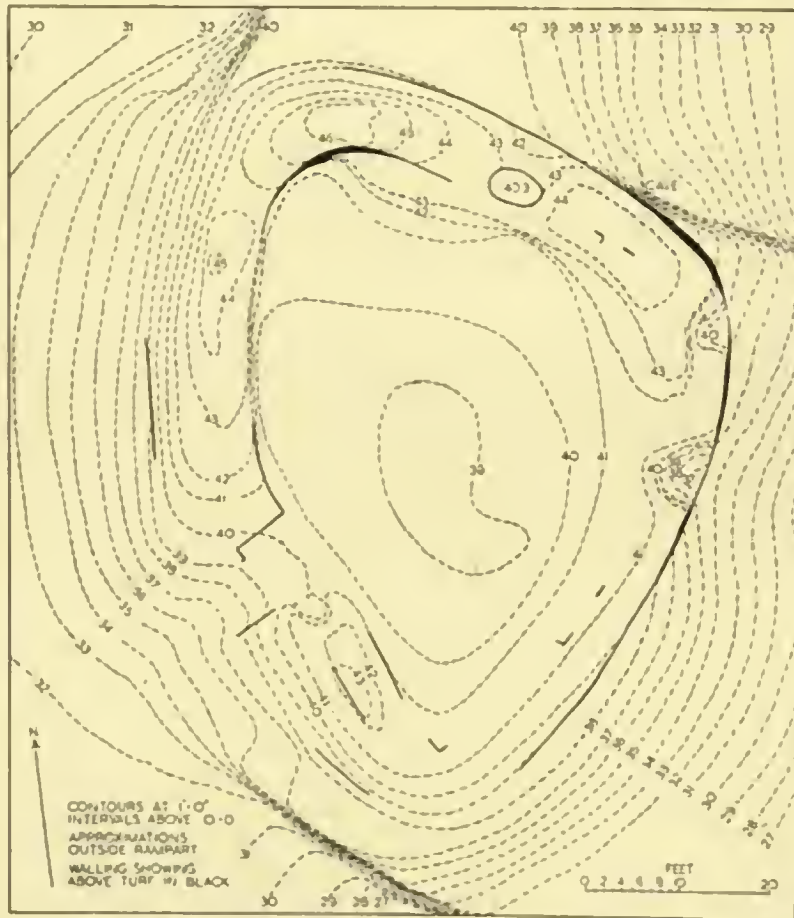


Fig. 2. Map 2.—The site of the Kildonan Fort before excavations.

found in the brochs. Commencing 3 feet south-east of the cell was another stretch of walling facing inwards, running parallel to and half-way between the inner and outer revetments of the rampart; in addition, there was a short cross-wall forming a right angle with it, and running as though to abut on the inner face. A similar right-angled corner was exposed in the south-east sector. Furthermore, the alignment of an occasional stone on top of the rampart along the seaward side suggested more walling half-way across, running parallel to the inner and outer revetments.

Traces of what appeared to be a kitchen-midden had been detected, by members of the Kintyre Antiquarian Society, in the cleft which runs along the south side of the hillock between the iris bed and the beach.

THE EXCAVATIONS (GENERAL).

Early in 1936 the members of the Kintyre Antiquarian Society invited me to conduct excavations at a selected site in Kintyre, and promised to supply paid labourers; it was their initiative, continued financial help, and encouragement which made these investigations possible. The site at Kildonan, which we chose without much hesitation, provided a far larger task than was originally contemplated either by the Society or myself, and it is a real pleasure to place on record my most sincere thanks for the original invitation, and for the most generous support which the members have given to me.

After permission had been granted by his Grace the Duke of Argyll, excavations commenced in June 1936, and were continued for a month. Two periods of work were undertaken in 1937, in July and September, and a fourth in June and July 1938. In all, nearly eighteen weeks were spent on the site, but of this period a number of days were completely lost through wet weather, the curse of the excavator in the west of Scotland. Two labourers were employed in 1936 and 1938, and three, and sometimes four, during 1937. Professor V. G. Childe was present during the first week, and a number of friends provided help during 1937 and 1938. The labour force was kept low, as an increase would have involved inexperienced workmen, and the site was too complex to consider this course.

Some rebuilding was undertaken along the outer face of the rampart, especially on the landward side, not as attempted reconstruction, but simply to preserve the fabric from collapse. The result is not gratifying, partly because of the almost complete absence of suitable building stones, all of which had apparently been removed to construct the modern dykes along the road, and partly because of the impossibility of matching the excellent masonry of the original without a large and highly trained labour force.

THE STRATIFICATION (GENERAL).

Within the area enclosed by the rampart the various strata and surfaces were as follows, commencing from the top:—

1. The surface before excavations started, referred to as "turf": large stones jutting through to give a very irregular surface.
2. Earth and stones, referred to as "debris," immediately below turf, representing a stratum formed since the last occupation.

3. The strata of the fourth occupation (Kildonan IV).

IVa—material accumulated during the fourth occupation resting on the 4th floor.

IVb—the stones and earth forming the 4th floor.

(In practice, IVa was nowhere distinct from debris.)

4. The strata of the third occupation (Kildonan III).

IIIa—a very thin occupation deposit.

IIIb—a floor of cobbles and earth, with two hearths and traces of walling.

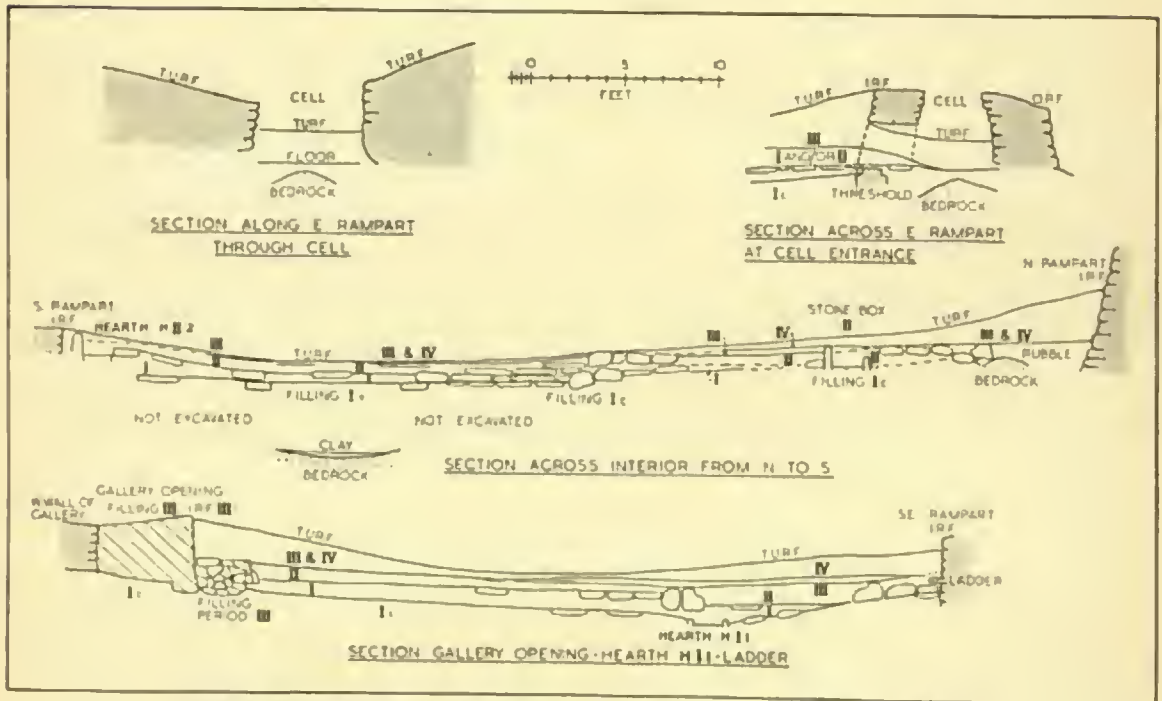


Fig. 3. Sections to show the stratification in the interior of the Kildonan Fort, and the form of the Cell.

5. A light brown loamy layer, completely devoid of relics, and found over most of the fort: since floor IIIb rested upon it, for reference it becomes IIIc.

6. The strata of the second occupation (Kildonan II).

IIa—the occupation deposit, difficult to separate from the strata below.

IIb—the 2nd floor, of earth, and flagging stones, on which were two hearths and traces of walling.

7. The strata of the first occupation (Kildonan I).

Ia—the occupation deposit, grading into IIa and IIb.

Ib—earth, stones, flagging, and pebbles forming the 1st floor, on which were three hearths and further traces of walling.

Ic—a coal-black soil below the 1st floor and resting directly on S. S. Virgin soil or bedrock—a yellow clay or, far more commonly, mica schist.

The task of stripping these strata presented considerable difficulty: the various horizons were far from horizontal, and sometimes dipped quite steeply independently of each other, so that *IVb* sometimes lay less than 1 foot above *Ib*, but sometimes was 3 feet above; in places floor *IVb* was almost 6 feet above bedrock, and subsidence seems to have occurred, distorting some of the lower strata; re-levelling took place at three periods; structures were often inset into strata below the true horizon, and stones on end were encountered which actually projected above turf-level, yet penetrated downwards into the *Ic* stratum. To disentangle this complex stratification in some cases was impossible, and the maps of the fort for Periods I, II, and III are not complete, and embody a certain amount of conjecture.

THE ORIGINAL FORT: KILDONAN I.

The Rampart.—When the hillock was first selected as the site for the dùn there were several disadvantages apart from the restricted outlook on the north and west sides. There was a long narrow projection on the north side of the hillock, and to have included this within the rampart would have resulted in a long and irregular-shaped fort. This extension was already difficult of access and was left outside without appreciable loss of security; it now appears as a narrow platform dominated by the rampart in the north. Furthermore, the top of the hillock was fearfully irregular, as the mica schist was broken into a number of great rounded blocks or bosses, generally smooth on top but with cracks and fissures on the sides, and separated from each other by deep clefts. These bosses all rose to within a foot or so of 40 feet L.D., and were disposed around a deep and irregular hollow in what is now the south central part of the fort, which fell in places below 34 feet L.D.¹ The rampart was constructed so that the foundations of the inner face passed either across the actual summits of the bosses or, more often, a little outwards from the top, while the foundations of the outer face lay somewhat downhill on the outer side. The idea, of course, was to make the enclosure as large as possible while

¹ Local Datum is a horizontal plane 10 feet below the topmost point of the boss of bedrock lying immediately by the inner face of the rampart just to the south of the junction with the south wall of the entrance passage. This point is in fact 41·7 feet above Ordnance Datum, as measured from the nearest bench-mark at 43·1 feet on the corner of the barn of Ballochgair Cottage, quarter of a mile along the main road to Campbelltown. All levels will be quoted in relation to Local Datum unless otherwise stated, and therefore lie 1·7 feet higher with reference to Ordnance Datum.

utilising the bosses in the construction of the rampart. The surface of the enclosure which resulted was so irregular that the builders adopted the obvious expedient of infilling the deep hollows nearly to the level of the

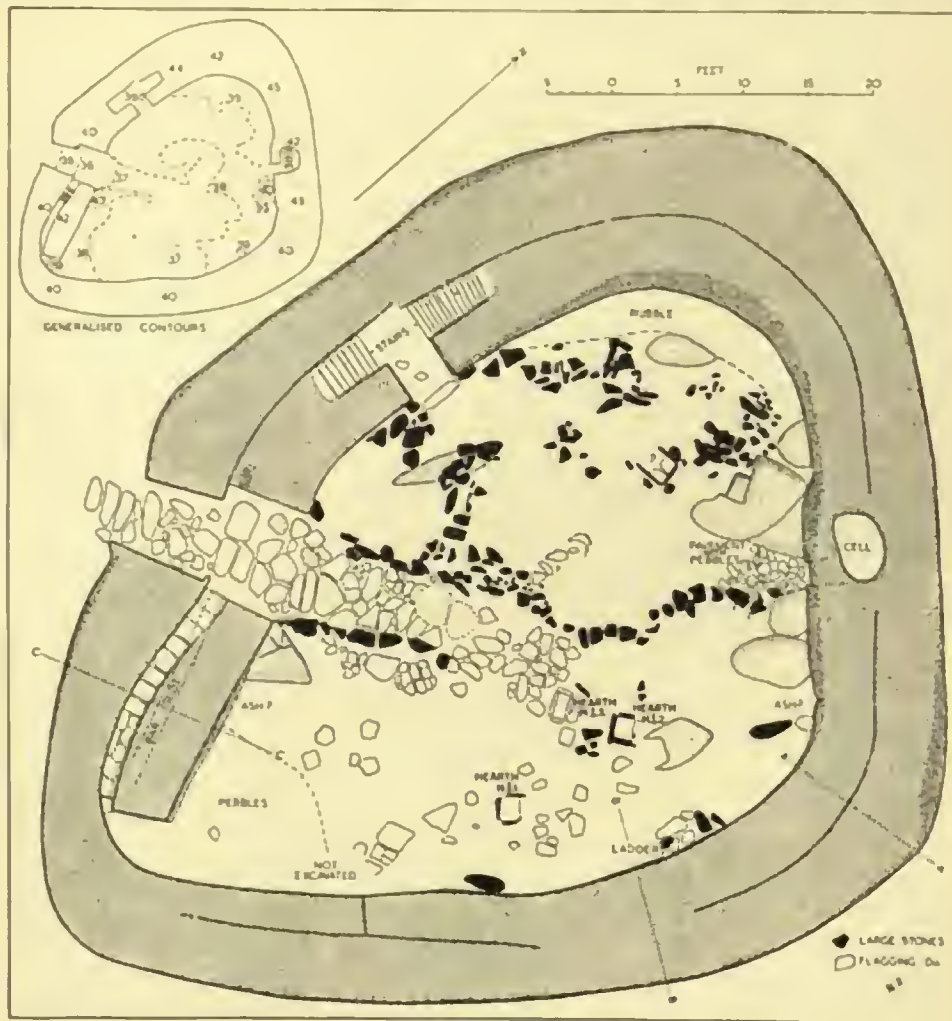


Fig. 4. The Kildonan Fort, Period I.

tops of the bosses—hence the coal-black Ic deposit, resting on bedrock and beneath the primary (Ib) floor. Subsidence in this infilling appears to have occurred during Periods I and II, and at present the bosses project well above the general level of the Ib floor.

The rampart reaches its maximum thickness of about 14 feet in the extreme north; it is about 13 feet near the entrance, 9 to 11 feet along the

seaward side, and narrows to 8 feet in the extreme south. The height at present varies considerably. The inner face stands 3 to 4 feet above the approximate level of the primary floor for the most part, but rises in the north to over 7 feet, and from the presence of what appeared to be "capping stones" in this section and also on the south side of the entrance it would seem possible to estimate the original height of the *inner face* as not much more than 7 feet above primary floor-level. The outer face varied in height in accordance with the irregularities of the hillock; along most of the west side, where it is badly ruined, it now stands no more than a course or two high (apart from our extensive rebuilding), but along parts of the eastern face the original masonry still rises to upwards of 7 feet, and was once much higher. There are some indications that a form of breastwork existed on the outer half of the rampart,¹ and, if this were so, then the outer face must have stood over 15 feet high in one or two places along the seaward side, and over 12 feet at the entrance.

A complete section was cut across the rampart in the eastern sector, 12 feet south of the cell, utilising one of the great holes which so much disfigured the monument on this side (see section A-A, fig. 5). The outer face was founded on bedrock, and consisted of large roughly trimmed blocks, half a yard square and 8 inches thick on the average; just north of the section it stood 8 feet high when the debris at the foot was cleared, and had a marked batter of 1 : 4,² rising near the base to 1 : 3. It formed a revetment to a rubble core. The inner face, again founded on bedrock, was much more roughly built of uncoursed masonry, with no appreciable batter, and again formed a revetment to a rubble core. About half-way across the rampart—that is, 4 feet 6 inches outwards from the inner face—another revetment was found, consisting of a vertical wall, facing inwards, roughly built of smaller stones than those even of the inner face, and dividing the rubble core into two compartments. The rubble of the inner core was more loosely packed than that of the outer. The middle revetment, or "median face" as we named it, was founded, not upon bedrock, but on a layer of slabs 1 foot 6 inches thick, which formed the base of the outer and inner cores: in no sense did this slabby layer resemble a paved floor, but a pile of whelk shells was found resting on it, and piled against the median face. The section suggested that an early rampart represented by the outer revetment, outer rubble core, and median face had been subsequently thickened by the addition of the inner face and inner rubble core. Unfortunately in the section only the strata of Periods III and IV abutted against the inner revetment.

To elucidate the situation a second section was cut some 16 feet south

¹ The presence of a *tein* staircase is easily explained in this way, as the breastwork, rising from the casing-wall, would preclude movement along the rampart walk, past the staircase.

² *I.e.* it inclined 1 foot from the perpendicular for a rise of 4 feet.

of the first, utilising the other great hole on the east side of the rampart. The result was almost exactly the same (see section B-B, fig. 5), save that the median face rested on bedrock, though the slabby layer and the wheelks were present. Yet all the strata from Ic to IV abutted without any sign whatsoever of disturbance against the inner revetment. Since the Ic infilling antedates slightly the primary floor, there can be no doubt that

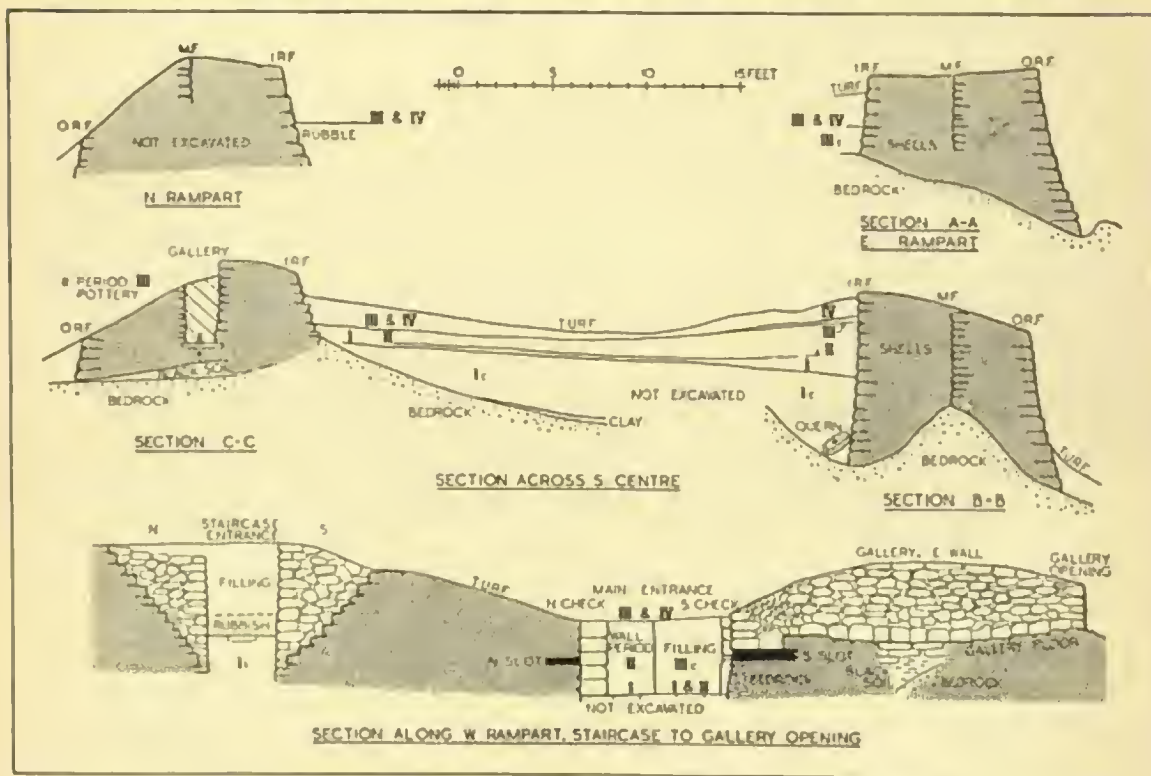


Fig. 5. Sections to show the structure of the rampart of the Kildonan Fort.

the rampart with its two rubble cores and partitioning wall or median face was constructed in the primary building operations. No evidence subsequently came to light to cause this conclusion to be modified.

The discovery of the median face led to extensive investigations on top of the rampart, and eventually the middle revetment was traced from the second to the first section (see fig. 4—Period I), and then to the edge of the casing-wall of the cell; it recommenced on the north side of the casing-wall and ran continuously through the northern sector of the rampart, formed the western casing-wall of the staircase, and ended at the door-check or rebate on the north side of the entrance. Reverting to the second section, this median face appeared to have been destroyed

by the vandals responsible for the great hole previously mentioned. It was picked up some distance to the south-west and was followed to the curious right angle formed by a short "cross-wall" facing north-east, and running through the inner rubble core to abut at right angles upon the inner revetment, where it appeared as a vertical joint in the masonry; the significance of this "cross-wall" will be discussed later. Thence, the median face continued for another 15 feet, but simply petered out in the rubble core just before the abrupt turn in the rampart in the extreme south of the fort; a short section was cut from the outside to verify this apparently casual ending.

The south-west sector of the rampart, south of the entrance, showed a different structure. Another section was cut 10 feet south of the entrance, commencing at the outside. The outer face was but 3 feet high, and once more formed a revetment to a rubble core. Five feet inwards the back of a wall was encountered and proved to be the western revetment of a gallery 2 feet wide, running within the thickness of the rampart (see section C-C, fig. 5). This gallery was filled with rubble of a smaller size than that of the outer core, and under this, resting on the flagged floor, sherds of pottery of Period III were discovered. No point was to be gained by continuing the section farther, especially as the inner half of the rampart was one of the finest sections in the whole fort. Obviously the gallery had been filled in during Period III, and we cleared away this rubble to expose the original structure. It began on the south side of the entrance (see fig. 4), 3 feet above the floor of the passage and over one of the schistose bosses incorporated within the rampart. At this northern end the gallery was 1 foot 10 inches wide, with a horizontal floor carefully flagged; the casing-walls, after the first 4 feet, where they were badly ruined, were vertical, uncoursed, and rather roughly constructed, so that the masonry was suggestive of the median face rather than either the outer or inner face of the rampart. Curving slightly, the gallery widened to 2 feet at the section, and then rapidly narrowed until it was but 6 inches wide. In this southern section the casing-walls were very rough, with projecting angular stones, and the slabbed floor was most uneven. After the constriction the western casing-wall (see map) curved evenly round and became the inner revetment of the south sector of the rampart (Pl. LXXIII, 1). The east wall turned an acute corner, and ran transversely to meet the inner revetment running southwards from the entrance. The floor of this curious funnel-shaped "gallery opening" dropped steeply from the flagging in the gallery to the 1c infilling at the foot of the inner revetment. When the gallery was filled in during Period III, a blocking wall was constructed across this gallery opening, so that the inner revetments of the south-west and of the south sectors of the rampart met at a right angle.

The gallery, from the entrance to the constriction at the head of the gallery opening, is 18 feet long, and the easing-walls at present stand 3 feet to 4 feet 6 inches high; since no trace of a deposit earlier than the Period III infilling was found on the floor, the only possible conclusion is that it was originally roofed over. If our estimate for the original height of the inner half of the rampart be at all correct, the gallery cannot have been more than 5 feet high at the most. In the northern half, where it is 1 foot 10 inches to 2 feet wide and carefully flagged, it might possibly be described as a passage or storage place, but as for the southern half, narrowing to 6 inches, with an extremely irregular floor and with angular stones projecting from the easing-walls, nothing could be less suggestive of a storage place or a passage.

The obvious conclusion is that both the median face and the gallery serve a similar structural function. Had the rampart been built simply with two revetments and a rubble core, the loose infilling above a plane rising at about 45° towards the centre of the rampart from the foot of the revetments would have pressed downwards and outwards, just as a heap of grain or the scree on a mountain-side tends to find its angle of rest. The resulting thrust in a structure of this height and thickness would have been so great as to threaten the stability of the retaining faces. At Kildonan, too, the foundations of the outer face are generally a foot or two below those of the inner face, so that the thrust upon the outer revetment is increased by the additional volume of rubble tending to slip downwards and outwards in that direction. Both the median revetment, which invariably presents its strongest face inwards, and the gallery may be considered as supports for the loose rubble core, to lessen the thrust upon the revetments.¹ The gallery is the more efficient, since it is a double wall and its construction implies a smaller volume of rubble, but it was more difficult to build. It is interesting to note that the rampart through which the gallery runs is especially thick—possibly because it is near the entrance. Now, apart from the large volume of loose rubble involved, the rampart also traverses a cross-gully between the boss on the south side of the entrance and another on the north side of the gallery opening, so that cross-stresses in the rubble core would cause a still greater thrust than usual upon the outer face. Furthermore, the difference in level between the foundations of the inner and outer faces is very marked, especially just north of the actual line of the section. Perhaps the builders realised that in this particular sector the difficulties of constructing a thoroughly stable rampart were greater than usual, and preferred the device of the gallery to that of the simpler median face which was employed in the other six-sevenths of the length of the rampart. The median face

¹ This is an over-simplified interpretation, but Dr W. MacGregor of Glasgow University Engineering Department, with whom I discussed the principles involved, assures me that it is fundamentally correct.

would doubtless be continued upwards above the level of the inner face of the rampart to form the inner revetment of the breastwork, if that feature actually existed. The additional weight of this superstructure would, of course, have been a further incentive to strengthen the base by constructing the median face and gallery.

The entrance consists of a well-paved passage, provided with door-checks and bar-holes half-way along the side walls. Measured on the

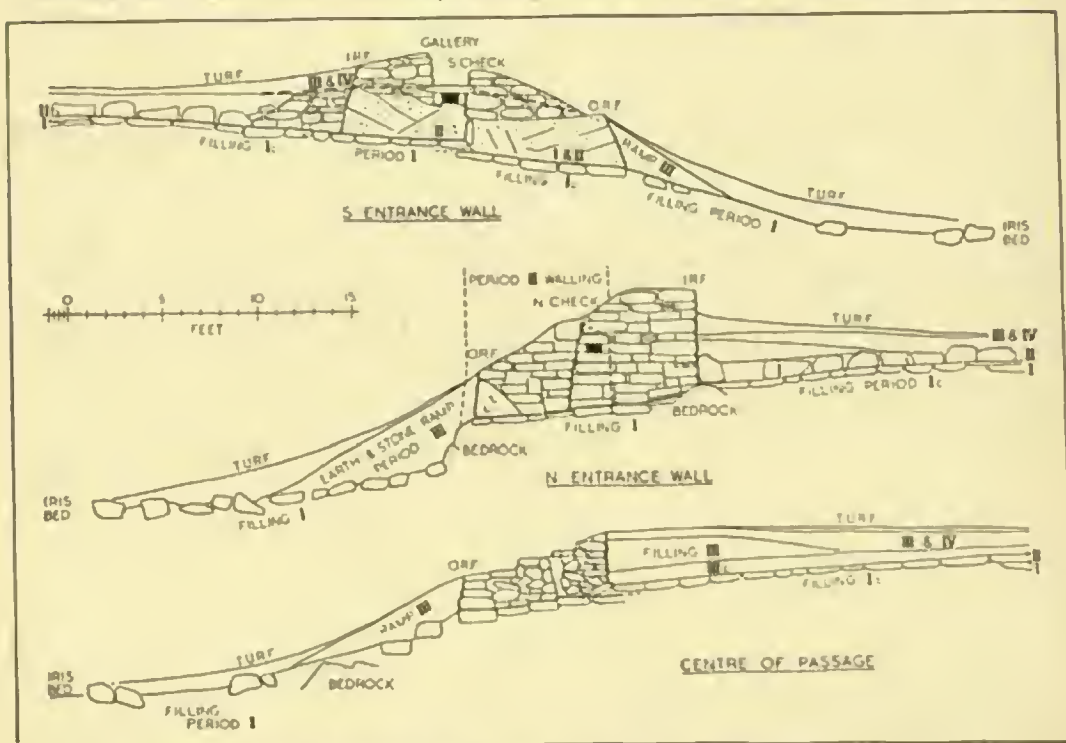


Fig. 6. Sections through the Entrance of the Kildonan Fort.

medial line, the passage is 13 feet 6 inches long; the width is 5 feet 5 inches at the outer end, whence it increases slowly to 5 feet 11 inches, and then, beyond the rebates, becomes 8 feet, reaching its maximum of 8 feet 6 inches at the inner end. The lower 2 feet or so of the southern wall consists of a face of bedrock, over which lies the end of the gallery (Pl. LXXIII, 1); the south door-check, 6 inches deep, is formed at the bottom, of an upright slab, and at the top of an extension of the western casing-wall of the gallery. Before rebuilding, this wall reached its maximum height of 4 feet 9 inches just west of the gallery. The north wall, part of which rises to a height of 4 feet 6 inches, is 3 feet shorter than the southern, for

the positions of the four corners of the passage appear to have been chosen in relation to the lie of bedrock, not for symmetry (see plan, fig. 4). The door-check on the north side is 1 foot 4 inches deep, and noticeably overhangs towards the interior of the fort at the rate of 1 : 6 (Pl. LXXIV, 1). The reason for this overhang may have been to accommodate a socket stone at the foot of the check for a swivel pin for the gate; no socket stone was found here, for there was rebuilding during Period II, but one of the type envisaged was actually discovered in this secondary walling. When closing the passage, the gate was held in position against the checks by a horizontal bar behind, for which slots were provided in the passage walls. It is significant, in the first case, that the bases of the two checks are not in alignment, though the tops would be brought strictly opposite by the overhang on the north check if the passage were 6 feet high; secondly, the slots for the bar, though directly opposite, are not equally spaced from the checks, for that on the north side is 8 inches inwards, and the southern slot is but $4\frac{1}{2}$ inches inwards from its associated check. It is a simple precaution to build a vertical check and to see that the two bar-holes are equally spaced from their respective checks, and unless we are prepared to believe that the builders purposely made an ill-fitting door we must accept the idea of a socket and swivel pin upon which the gate rotated on the north side of the passage.

The slot on the north side is merely a bar-hole 1 foot 10 inches deep, but that on the southern side extends 16 feet into the thickness of the rampart, and was obviously intended as a receptacle for the bar when not in use: it is curious to note that a pole 11 feet long would be ample to span the passage and allow purchase in the slots. Again, the alignment of the southern slot does not allow a bar to be slipped directly into the slot on the north side, which is 1 foot out of line (see plan, fig. 4), and to get the bar home requires an awkward swivelling movement which can be accomplished only with a length of about 10 feet. There is no indication of any gravitation outwards of the rampart as a whole, which might be suggested by these curious maladjustments, and even if the explanation for the overhanging check be accepted, we are still faced with the error in the alignment of the bar-holes; ill-fitting locks are apparently not a new phenomenon.

The pavement of the entrance passage slopes downwards from the interior of the fort rather steeply, with an average gradient of 1 in 5 or 6, and continues 3 feet beyond the line of the outer revetment. Then it gives place to an earth and stone ramp, leading down to the iris bed; the purpose of this ramp was not to ease the gradient down from the entrance, but to smooth out the irregularities of the rock surface on the side of the hillock. Many large slabs were found embedded in it, but whether these were part of the infilling, or slabs fallen from the rampart, or traces of outworks, it

is impossible to say with certainty, but after very careful study I came to the conclusion that outworks did not exist. Originally a path must surely have led westwards from the fort to the arable land on the hillside, but no sign of it was found. In the cleft at the base of the hillock on the south side, where traces of kitchen-midden had been detected, two sections were cut down to bedrock, and we were driven to the conclusion that the earth, stones, shells, bones, and refuse generally did not represent ordinary "kitchen-midden," but had been carefully placed in the cleft to provide a regular floor. In other words, the narrow steeply sloping gully curving round the south side of the hillock (see fig. 1) must be regarded as a sea-way or road from the entrance down to the beach. Overlooking the upper end of this cleft there is a narrow rock platform at the foot of the outer face of the rampart, which was probably used in the defence of the fort (see figs. 1 and 2).

The twin staircase was not visible before excavations began, as it had been walled up and filled in not very long after the construction of the rampart. The entrance to it is an opening in the inner face of the rampart 11 feet northwards of, that is to the left of, the main entrance; it is 3 feet 6 inches wide, and runs inwards between vertical walls for 3 feet 6-8 inches. Then on either side a set of steps leads upwards to the rampart top, while the floor continues between them to the western easing-wall. This is roughly built, and in fact part of the median face of the rampart as a whole; on the line of the north wall of the staircase entrance there is a great crack running up the masonry of this western easing-wall, and the part to the south seems to have slipped outwards by about 12 inches (see fig. 4). The two sets of steps are not identical and their measurements may be summarised as follows:—

	Length.		Breadth.		No. of Steps.
	Ft.	In.	Top. Ft.	Foot. In.	
North	5	2	2	9	3 3
South	4	10	2	11	3 7
					14
					9 (1 missing from foot)

The steps on the north side are more numerous but more irregular, generally smaller individually, and the stones are less carefully selected and laid in position—in five cases the steps consist of two stones instead of a single slab (Pl. LXXIII, 2), on the south side all the steps are single slabs, and Nos. 2, 3, 4, 7, and 8, counting from the top, are to some extent bonded into the eastern easing-wall, though no such bonding occurs on the western side, nor in the north staircase.

Two curious features were discovered. In the first place, the foundations of the staircase entrance and the eastern easing-walls do not rest on bedrock, but are placed in the le infilling. Secondly, the earth floor

of this entrance (floor 1*b*, above the infilling 1*c*) was at such a height as to cover the three lowest steps on the south side and the four lowest on the north side (see section along western rampart, fig. 5): there was no floor at the level of the lowest steps, but merely the 1*c* infilling. This latter point seems to prove that in spite of the minor differences in the appearance of the two sets of steps both are primary features. The explanation of the two anomalies just mentioned seems to be as follows. During the original building operations the outer half of the rampart as far as the median face was constructed first; later, but still during the original building operations, the two staircases were built, possibly by different gangs of workmen, on top of some refuse (now part of the 1*c* infilling) which had already accumulated within the fort. When the time came, still later, to level the enclosure within the completed rampart for the primary floor (1*b*), the builders found that they had laid the bottom steps too low for the most convenient floor-level; after abstracting the lowest step on the south flight to serve as a threshold at the inner revetment (see fig. 4, Period I), the superfluous steps were buried amid the 1*c* infilling.

Almost at once the staircase appears to have been used as a receptacle for rubbish, and apparently not long after the completion of the fort the whole was filled in and walled up, possibly on the development of the great crack in the western casing-wall. It is rather disappointing to think that this really attractive feature of the fort, the twin staircase, was but little used, and soon proved to be an unsuccessful venture on the part of the builders.

Some 20 feet south of the cell there was found, against the inner face of the rampart, a flagged area about 3 feet square, directly over which, and 9 inches above it, a square slab projects from the revetment. This appears to be the lowest "rung" of a ladder or stile leading to the rampart top. Unfortunately the rampart here was too ruinous to trace the ladder beyond this lowest step.

The cell, entered by a small opening 2 feet 7 inches high, 2 feet 3 inches wide at the maximum, and 2 feet 6 inches long, is an irregular oval in plan, measuring 5 feet 10 inches parallel to the axis of the rampart, and 4 feet 8 inches at right angles to this line (see sections across the cell, fig. 3). It is clear that the casing-walls once converged to a corbelled roof, at a height of somewhere about 6 feet above primary floor-level. The earth floor of the cell showed signs of disturbance, and embedded amongst the infilling beneath this floor and resting on bedrock several potsherds of Period III were found. This might suggest that the cell itself may be an insertion into the rampart of Period III; furthermore, the casing-walls of the cell do not rest on bedrock, but on earth and rubbish. Again, on the inner face of the rampart,



1. The Kildonan Fort after excavations.



2. The Interior from the Entrance, Period I.

H. FAIRHURST.

PLATE LXXII.

To face p. 200.



1. The western half of the Fort, Period I. The staff in the Entrance marks the end of the Gallery.



2. The north Stairs, with the Staircase Entrance on the right.



1. The north wall of the Entrance, Period I.



2. The Entrance with the secondary walling, Period II.



1. The north-west sector of the Fort, Period II.



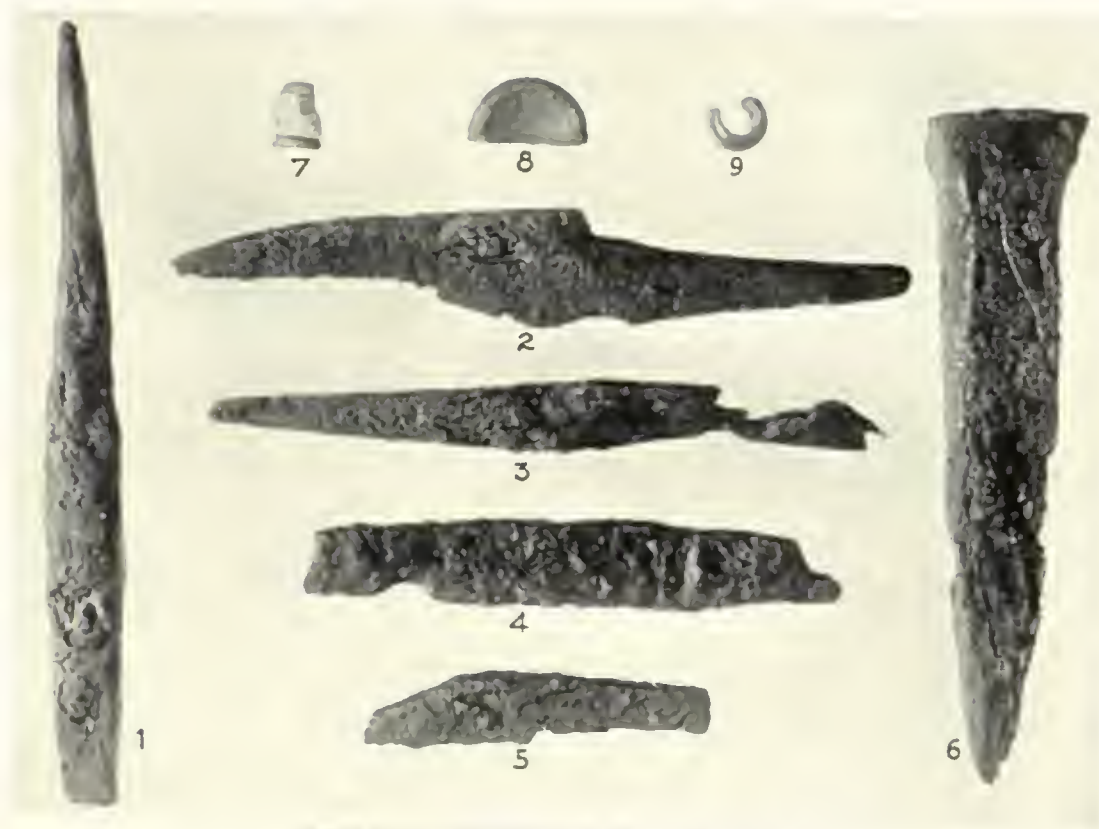
2. Sockets exposed at Period II horizon (Numbers 35 and 30), with the "stone box" to the right of the staff.



1. The north-west sector of the Fort, Period III. The staff marks the secondary walling across the Staircase Entrance.



2. The north-west sector of the Fort, Period IV.



Relics from the Kildonan Fort, Periods I and II. (1.)

1. Awl-like implement, Period I.
- 2, 3, and 4. Parts of knives, Period I.
5. Part of a knife, Period II.
6. Part of a large pin, or possibly a chisel, Period I.
- 7 and 9. Parts of beads, Period I or II.
8. Piece of red enamel with yellow markings, Period I.



Relics from the Kildonan Fort: stone discs and whetstones, Periods I and II, and a pot-lid (7), Period III. ([.)

- 1 and 4. Stone discs, Period I.
- 2. Toggle, Period I or II.
- 3. Stone disc, Period I.
- 5. Spindle whorl or weight, Period I.
- 6. Whorl or toggle, Period I.
- 7. Pot-lid, Period III.
- 8. Whetstone, Period I.
- 9. Whetstone, Period II.

6 feet 6 inches to the north of the cell mouth and 8 feet 5 inches to the south, there are two very conspicuous joints in the masonry: between these two joints the revetment follows a curve which is convex to the interior, in contrast to the rampart elsewhere (see fig. 4). Yet there is no evidence of disturbance along the inner revetment such as must have been apparent had the cell been inserted at this later period: secondly, during Period III there was a hearth at the cell mouth: again, the level of the interior of the fort was by this time so high that it was almost impossible to crawl into the cell. It is difficult to believe that the inhabitants of Kildonan III carefully built this chamber, and immediately half-buried the entrance, constructed a hearth at the mouth making ingress virtually impossible, and finally left no visible traces of their activities apart from the fireplace. The cell is almost certainly a primary feature, and for some reason not apparent the inhabitants of Kildonan III disturbed the earth floor and threw away some potsherds there. The "joints" on either side deserve special consideration elsewhere.

The outer face of the rampart appears to be of a consistent type of masonry throughout: large slabs, often measuring about 2 feet long, 12 to 18 inches wide, and 6 to 9 inches thick, have been carefully laid and roughly coursed, and many of them have been trimmed to shape. The face usually has a marked batter of somewhere about 1:8, rising near the foundations in places to 1:3, but sometimes falling, as in the north, to 1:12. The inner face, however, shows very marked variations. South of the entrance the wall consists of large roughly squared slabs, with the interstices carefully packed with small very thin slabs, or slats; the batter is about 1:2 near the foundations, but rapidly decreases upwards. Running obliquely across this masonry between the entrance and the gallery opening there are traces of a joint (Pl. LXXIII, 1). The passage walls of the entrance are vertical and built of well-trimmed slabs, not coursed, but packed with slats. The south and east sectors of the revetment are very much rougher in form, for there is no batter, coursing, nor packing with slats, and the stones are irregular in shape, though they present a smooth face at the revetment. Between the joints on either side of the cell the wall consists of well-laid and rather thin slabs, but to the north large blocks are characteristic, and there is to be found one of the finest stretches of masonry in the fort, making a wall with a marked batter of 1:4 (Pl. LXXII, 2). Near the staircase the wall is more vertical and the stones more irregular in shape, and "slatting" occurs. There are again traces of a joint running obliquely up the masonry between the staircase entrance and the main entrance, at about the line of the south set of steps (Pl. LXXIII, 1).

The primary floor abutted apparently without signs of disturbance upon all these types of masonry, so that there is no evidence that the variations are due to reconditioning in later phases of the occupation of

the fort. The joints on either side of the cell and the variations in the masonry thus constitute particular cases of a general problem.

We would suggest an explanation along the following lines. The outer half of the rampart between the outer revetment and the median face, together with stretches of the foundations of the inner half, as for instance in the south-east sector, were constructed by the builders first of all. Then the individual features, such as the cell, the staircases, the entrance and the gallery, were erected one at a time, often after some rubbish and chippings from the masons' hands had accumulated within the enclosure. This would account for the presence of the whelk shells at the foot of the median wall, in the sections cut across the rampart in the south-east, and for the fact that some of the walling rests in the Ic infilling, not on bed-rock. Finally, the gaps between were built up,¹ and trouble was not taken to see that the masonry was everywhere the same on the inside of the fort. Perhaps gang work is indicated, or the type of walling was a response to the quality of the building stone available, for, while well-trimmed slabs were thought necessary for the outer face of the rampart, "seconds," *i.e.* irregular blocks, appear to have been used to complete the inner revetment.

It is to be borne in mind that the builders were probably not working to a detailed pre-arranged plan of operations, as the Kildonan fort does not follow a more or less stereotyped form such as the Broch, and, judging from an examination of upwards of fifty forts which I myself have seen in various parts of Argyll, there is no strictly parallel type nor set model which the builders can have used as a prototype. It may be that closer parallels will be revealed by future excavation or that they exist in Ireland, but on the whole I am tempted to think that the form of the din is to a considerable degree a response to the conditions of the site, and that the final arrangement was arrived at by empirical methods. Mistakes may have been made, as with the alignment of the bar-hole and the height of the steps in the staircases, and possibly the curious "cross-wall" in the south sector of the rampart was the beginning of some structure which was never completed. Nevertheless the rampart appears in its final form as a well-constructed, integrated whole, and, although the form may be unusual, it does not seem to be freakish. Nowhere is the impression given that the builders were expressing in their din half-understood principles and lingering ideas of a decaying tradition.

THE INTERIOR OF THE FORT IN PERIOD I.

One of the most interesting features of the Kildonan fort is the presence beneath the primary floor of the infilling (Ic), to which reference has

¹ The curious right angle showing on top of the rampart just south of the cell before excavations began (see page 188) probably represents one of the temporary ends of a "section" of the masonry.

repeatedly been made. This deposit is in places 4 to 5 feet deep, and usually rests directly upon bedrock, but in the great hollow which originally existed in what is now the south central part of the fort there intervened a layer of bright yellow clay, 2 to 3 inches thick. This *Ic* stratum is normally almost coal black in colour and is made up of rather fine soil in which are embedded numerous large stones; pot-boilers and cracked stones occur frequently, and large quantities of animal bones were found in the south central hollow. The builders apparently did not trouble to make a level surface everywhere within the enclosure, for some of the upstanding portions of bedrock were left jutting above the primary floor as the great "bosses" previously mentioned; it is difficult to estimate the original floor-level owing to the fact that subsidence has probably occurred. Apart from these bosses, the infilling was encountered everywhere inside the fort and beneath the pavement in the entrance passage, but it was not excavated throughout. The task would have been one of considerable magnitude, and there was the difficulty of preserving the pavements and other structures on the primary floor, while, judging from the sections which were investigated down to bedrock, the deposit was extraordinarily poor in relics, apart from the animal bones.

It seems an obvious expedient to fill in the hollows in the bedrock to form a convenient floor-level, and yet at *Druim an Duin*, near Loch Sween, and at King's Cross Point in Arran, where the bedrock slopes almost as steeply, the excavators seem to have found no traces of such a deposit; in the present state of our knowledge an infilling on the scale of that at Kildonan must be considered an unusual feature.

The investigation of the deposits associated with the primary occupation (*Ia* and *Ib*) presented considerable difficulty. In the first place, the primary floor was far from horizontal; the occupants of Kildonan II had systematically razed the buildings which undoubtedly existed in Period I within the enclosure formed by the rampart, presumably when they were attempting to form a level surface for a new floor; and, finally, these inhabitants of Kildonan II added to the confusion by insetting the foundations of their own buildings into the older strata (*Ia*, *b*, and *c*).

From the meagre evidence available we provisionally obtain the following picture for Period I: A pavement ran inward between two walls, from the entrance to the central area of the fort, where it ended on the far side of a small hearth (*II I 3* on the map). Around this pavement there were half a dozen or so small huts, the boundaries of which could not be precisely defined; in at least two we found hearths (*II I 1* and *2*) formed of a horizontal slab and a low curb. No passages appear to have led either to the staircase, cell, or ladder, all of which opened from one or other of the enclosures. The huts were presumably small hovels, in contrast to the fine rampart around them; the foundations, which remain, are not

altogether unlike those of the much later sheilings which one sometimes encounters on moorland walks. The hut walls probably consisted of stone and turf, laid upon stone foundations, and apart from a vague tendency to branch or radiate from the central area they did not conform to a regular design.

KILDONAN II

In the general discussion of the deposits within the fort (page 189) reference was made to a sterile loamy layer (IIIc) which underlay the occupation debris of Period III. During the time which elapsed between the original building operations and the beginning of the accumulation of this loam the interior of the fort was radically altered. At first sight this might suggest an entirely different occupation, but the changes which were made were probably not all simultaneous, and there is nothing in the stratification of the intervening deposits between the 1b floor and the IIIc loam to indicate a gap in the occupation of any length of time. The simplest explanation seems to be that the inhabitants of Kildonan I themselves made some alterations—possibly the walling up of the staircase is one—and that newcomers later razed the old interior walls, constructed new huts, and introduced a new hearth type; perhaps there was a short period during which Kildonan was uninhabited, or perhaps the fort was captured, suffered some destruction, and was immediately reconditioned. An attempt will now be made to describe the site as it was just before the IIIc loam commenced to accumulate. For convenience the reconditioned fort will be referred to as Kildonan II, and the time during which it was occupied as Period II, but it must be borne in mind that there is no satisfactory evidence for assuming that there was an interval between the primary occupation and this later phase or period; in practice it was often quite impossible to differentiate the soil and rubbish (and relics) which accumulated in Periods I and II.

The form of the entrance had been considerably changed, and door-checks and bar-holes were apparently out of fashion in Kildonan II times (Pl. LXXIV, 1 and 2). A solid block of masonry had been constructed to reduce the outer two-thirds of the passage to half the original width (see map, fig. 7). This secondary masonry was roughly built, except for the western face, which consisted of large slabs, and was continuous with the outer revetment of the rampart to the north. The new masonry commenced about a foot outwards from the old outer north corner of the entrance, and ran inwards so that it just covered the bar-hole on the north side. The new passage between the secondary masonry and the old south wall was reduced to 2 feet 8 inches at the outer end, and to 3 feet 8 inches where the constriction ended (see map): the inner third of the passage continued to be 8 feet to 8 feet 6 inches wide as before, but it was repaved and the

old slope made practically level. At the junction where the old floor in the narrow portion ran beneath the new paving there was a marked step upwards of about 6 inches, which was, however, masked by three large

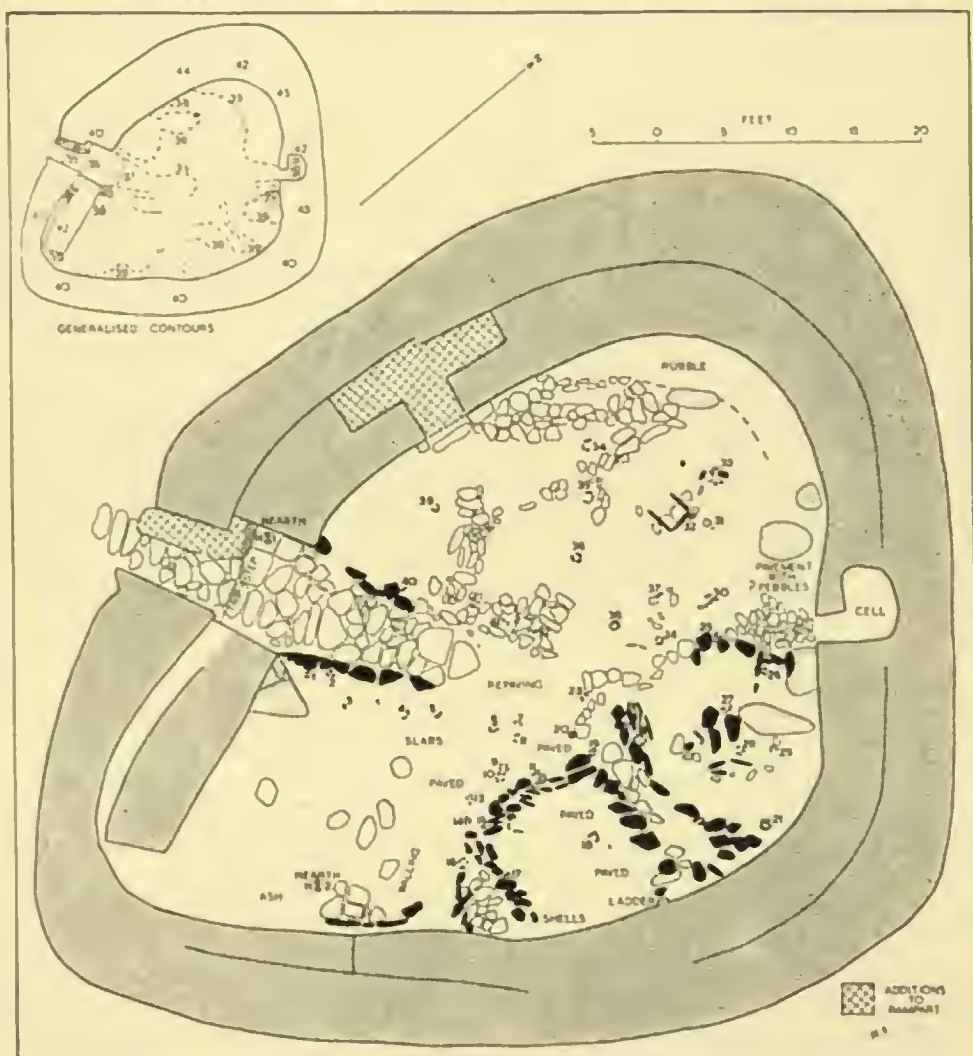


Fig. 7. The Kildonan Fort, Period II.

slabs in a row across the passage and lying aslant on the step. The flagging stones of the new paving were so arranged as to leave a sunken hearth (H II 1) in the corner between the old north wall and the eastern face of the secondary walling: it measured 2 feet along the old wall, and was 1 foot 6 to 9 inches wide: there was no curb, but it was floored

by a horizontal slab nearly 6 inches below the surrounding pavement, and when discovered was filled with brown peat ash. Presumably a guard was stationed in the wider portion of the passage in the shelter of the secondary masonry, and this "guard-room" had been refloored and provided with a hearth: the three stones crossing the inner end of the narrow part of the passage were probably to form a "trip step."

An almost exactly similar type of hearth was found just by the cross-wall in the south sector of the rampart: this second example (H II 2) has been left intact within the fort. Horizontal flagging stones form three sides of a sunken floor measuring 1 foot 8 inches parallel to the rampart, and 1 foot 3-6 inches wide; it was again floored by a horizontal slab 6 inches below the pavement around. The back consists of large thin slabs set on end in a row, parallel to the inner face of the rampart and about 7 inches away. When first uncovered there were quantities of brown peat ash in the hearth and on either side, almost as far as the gallery opening on the west but only for a foot or so to the east, where a line of stones running inwards from the rampart indicated the position of a wall.

This hearth (H II 2) lay almost immediately below the IIIc loamy layer, and was more than a foot above the level of the primary floor (39.1 feet as against 37.9 feet L.D.), so that there was no difficulty in recognising the two horizons. Elsewhere within the fort, flagging stones occurred at the horizon corresponding to that of hearth H II 2, and repaving was detected almost immediately below the IIIc deposit in the central area; in various places too, especially in the south-west part of the fort, isolated slabs were lying at this "Kildonan II" horizon (IIb), as though somewhat casual attempts had been made to improve the earth flooring. But when this secondary paving was absent the soil between the primary floor and the IIIc layer consisted of a uniform deposit, very dark brown in colour, with plentiful signs of occupation throughout. In other words, the distinction between the Ia occupation soil and the IIa-b deposits was arbitrary, and hence the difficulty of separating the relics into Periods I and II. A further complication arose from the fact that the difference in level between the primary and secondary floors was often less than 6 inches, the considerable thickness beneath hearth H II 2 being quite exceptional.

At this "IIb" horizon there occurred a number of what appeared to be sockets to support upright posts or poles (Pl. LXXV, 2). The best-preserved examples consisted of three or more small stone slabs set on end, corner to corner, to enclose a small rectangular or triangular space 6 to 8 inches across: a number of these have been preserved within the fort. The upper edges of these stones projected well into the IIIc stratum, and some were actually incorporated in the IIIb floor, but the lower edges

often reached down to the Ib horizon, and many penetrated the Ic infilling. Of a total of over forty possible examples it can be said with certainty that the great majority were in use in Period II, and had been inset into the lower deposits; in some cases the primary pavements had been clearly disturbed in the construction. Although the remnants of a number were not encountered until the Ib floor was excavated, it is highly probable that all belong to the later period, though it must be stated for accuracy that some *may* belong to the lower horizon.

The sockets and large slabs which occurred at the same level give a moderately clear indication of the lay-out of the Kildonan II fort (see fig. 7, Kildonan II).

It would appear that the fort was entered by a very narrow passage, at the inner end of which was a trip step, and then came a "guard-room" provided with a hearth. From the entrance, a pavement between two walls supported by upright posts led to a very small central courtyard, whence a narrow roughly paved passage led to the ladder in the south-east. On the south side there were two enclosures, one in the south-west provided with a hearth, and one a small semi-circular hut south of the ladder. North of the ladder passage there was another enclosure extending to the cell; it is very doubtful whether a passage led to the cell mouth from the central courtyard. On the north side of the central pavement there may have been two enclosures near the staircase, but there was no passage to the staircase entrance, which in all probability had been walled up during Period I. Finally, a roughly rectangular structure surrounded a "stone box" framed by three thin slabs on end rising from 6 inches to 1 foot 2 inches above the floor in the north central part of the fort. The comparative absence of an accumulation on the floor, apart from the sterile loam, seems to suggest that the fort very quickly went out of use after the reconditioning which has just been described. It may have been partially destroyed, but the re-levelling of Period III makes it impossible to say with certainty, and the interior may simply have fallen into ruin, as is suggested by the survival of the sockets and the "stone box."

KILDONAN III.

Above the Ib floor and its associated structures there was found, almost all over the interior of the fort, the stratum of light brown loamy soil (IIIc) to which reference has previously been made. It was completely devoid of relics and of signs of occupation, and presumably was formed during a relatively long gap in the occupation of the Kildonan site. After this interval the whole of the interior was once more roughly levelled, and either flagged or cobbled with stones up to about 9 inches long. On this pavement a new set of huts came into being in the northern half of the

fort. The gallery was filled in and walled up at the "gallery opening" at this time; we discovered that the foundations of this short but well-built wall had been laid as deep as the 1c infilling, and for once the disturbance of the strata between 1c and IIIc was clearly distinguishable.

The entrance (see map, fig. 8) was restored to its original width, but was repaved at a higher level, about the height of the old bar-holes. The secondary masonry of Period II had been reduced in height, while the old guard-room and narrow part of the entrance had been filled in with large stones set on end to form the new pavement, which was thus about 3 feet above the old floor-level of Kildonan I and II (figs. 5 and 6). A low wall was discovered running for about 3 feet across the inner end of the passage from the inner south corner, but it had been damaged in the recent past, and in any case had suffered at the hands of the inhabitants in Period IV; its purpose was not apparent. The pavement near the inner end of the entrance too had been disturbed before excavations started; the outer part, westwards from the old gallery, was in better condition, and descended by four large rough steps to the line of the outer revetment to the rampart, and then gave place to an earth-and-stone ramp, leading downwards with a gradient of about 1 in 5 to the iris bed at the foot of the hillock (see sections, fig. 6). There was nothing to indicate that this new passage was roofed, and almost certainly it was open.

The passage gave access to what appears to have been an open yard occupying the whole of the southern half of the fort (see map, fig. 8): it was well paved near the entrance, but after about 10 feet or so gave place to a roughly cobbled floor stretching to the rampart on the south and south-east. There were no signs of walling nor of hearths, though stones of the walls of Period II sometimes projected through the cobbles. In the corner, at the old gallery opening, quantities of whelk shells and a few potsherds were found.

A wall of some form or other seems to have run inwards along the north edge of the well-laid pavement from the inner north corner of the entrance; the evidence, however, is rather doubtful, and the actual foundation-stones shown on the map for Period III are in reality the foundations of the earlier wall of Periods I and II. Clear traces of walling ran to meet this line from the wall blocking up the old staircase, long ago filled in. In the enclosure so formed there appeared to be a hearth (H III 1) against the rampart half-way between the entrance and the staircase. It consisted of a more carefully paved area than the cobbles around, measuring 3 feet 6 inches by 3 feet, and was 2 or 3 inches above the general floor-level, from which it was separated by a low curb; no ash was found.

Another hearth (H III 2) was discovered on top of the boss on the north side of the cell mouth. A rough curb about 3 inches high was found on the north and west sides, but on the south side we found only the

trench where the curbstones had once been set; the enclosure so formed measured 2 feet by 2 feet 3 inches. The whole area was covered

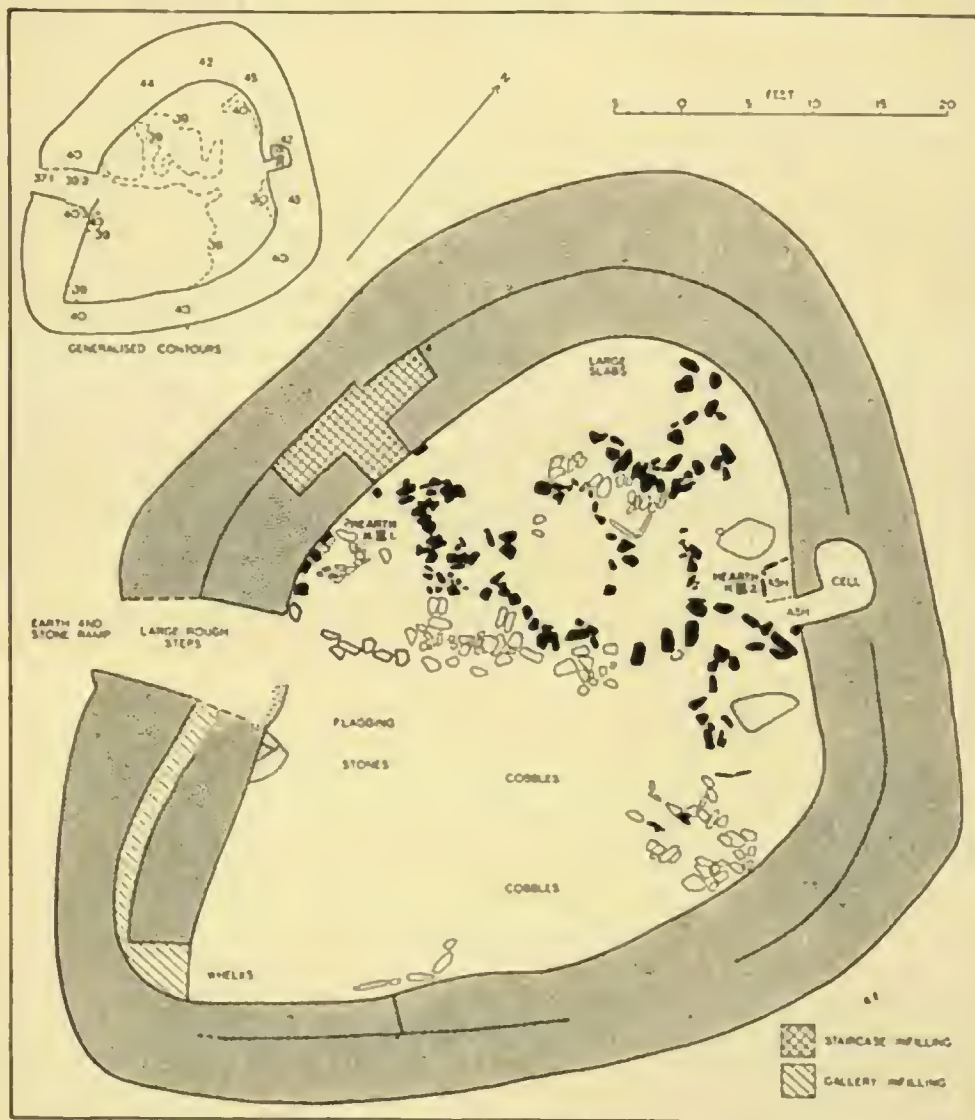


Fig. 8. The Kildonan Fort, Period III.

with brown ash, presumably from peat, which ran into the cell mouth, and was traceable on top of the earth floor of the cell chamber. The hearth itself was floored, as it were, by five large rounded pebbles, chipped with heat, measuring up to 5 or 6 inches across. Now stones of an exactly

similar size and shape, showing signs of chipping, had been found at various levels within the fort, and had been classed as "hammer-stones," but this situation appears to show that their true purpose was in connection with cooking operations, possibly for providing heat for an oven; they were certainly not hammer-stones or pounders.

This hearth (H III 2) appeared to lie in a small hut enclosure around the cell mouth (see map, fig. 8), the shape of which seemed to be given by a line of stones running inwards from the south jamb of the cell entrance to another line of stones, parallel to the rampart and about 8 feet away; the north-western wall ran to the rampart, so far as could be made out, about 13 feet north of the cell mouth. Between the enclosures of hearths H III 1 and H III 2 there were traces of possibly two other dwellings or huts (see map, Period III), of which the western appears to have had two very small annexes, by the north-east wall of the enclosure immediately north of the entrance. Yet another structure appears to have existed against the rampart on the south side of the cell mouth, but the traces are so vague that the dimensions cannot be given; it was probably about the same size and shape as the enclosure around hearth H III 2.

Although the gallery was filled in at this period and the entrance altered, there is nothing to suggest that the rampart as a whole was extensively reconditioned; some rebuilding may have been undertaken, but we had no criterion by which to recognise masonry which was later than the original.

Judging by the half-dozen small huts and the comparatively large open yard, the inhabitants of the fort were few, even by comparison with the numbers living on the same site in the two earlier occupations. It would seem to be more in accordance with the facts to designate Kildonan III as a small fortified hamlet within the old rampart rather than to class it as a "castle" of late mediæval times, within which Period III clearly falls.

KILDONAN IV.

Immediately after the close of Period III, which cannot have lasted long, the whole of the interior was levelled to form a very roughly cobbled floor; this involved the almost complete destruction of the existing walls, though it was not carried out so thoroughly as when the walls of Period I were razed. No hearths, walling, or anything else suggesting building occurred on the more or less horizontal floor which resulted; the cobbles lay just beneath turf in many places, and a tangle of bracken, briar, and whin roots had formed an almost impenetrable cover. In view of the disturbance which these roots had caused, and the rough character of the pavement itself, it was very difficult to differentiate the cobbles

from the debris above. There is no doubt of their actual existence, however, and the best explanation seems to be that the settlement of Kildonan III was levelled and the interior of the fort used simply as a cattle-pen.

THE RELICS.

During the discussion of the deposits within the fort emphasis has been placed more than once upon the difficulty of separating the relics of Period I from those of Period II, and there was the same problem with regard to Periods III and IV; the presence of the sterile IIIc loamy layer over most of the interior made it much easier to distinguish horizons II and III, but, even so, the change was not always clear. The following list indicates as far as possible the horizon at which the various objects were found, but in some cases the classification into four periods has perforce been abandoned.

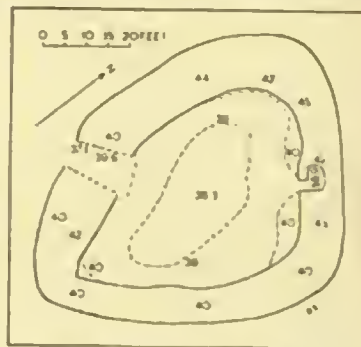


Fig. 9. The Kildonan Fort, Period IV (the cattle pen).

PERIOD I.

Domestic Pottery.—Almost completely absent except for a small sherd, 1 inch across and .6 inch thick, of coarse reddish ware.

Terra sigillata.—One small, very much battered sherd, .8 inch across and .4 inch thick, with faint traces of the red glaze on one side. Found at the 1b horizon, but close to an alignment of slabs inset in Period II. There is a possibility, as Professor Childe has suggested to me, that this sherd might have been treasured for centuries as a charm or amulet. *Terra sigillata* has been found on a number of West Coast sites of the Iron Age as far north as the Hebrides, and nearer Kintyre, at the forts of Ardifuar and Dmadd, and at Keil Cave, near the Mull of Kintyre.

Small Cup or Crucible.—Seven fragments of baked brown clay, rather soft, apparently forming parts of a small thick cup, roughly shaped, about 1.5 inch high and 2.5 inches across externally (see sections, fig. 10, 5).

Clay and moulds for casting metal objects. Large patches of soft reddish clay were found frequently where 1c gave place to 1b. Small pieces of reddish half-baked clay occurred commonly. Sixteen fragments of baked reddish clay, with smooth shaped surfaces, forming parts of moulds, or the clay binding for moulds, were found, and several fragments of baked grey clay, one resembling a nail head.

Bronze.—Two small pieces, probably parts of a needle from near the eye section, measuring 1.3 inch and .4 inch long by .08 inch to .1 inch thick.

Iron Objects.—These occurred commonly, but some were too corroded for treatment.¹

1. Awl-like implement with a flattened blunt tang, 4.1 inches long and

¹ I am very much indebted to Miss Annie S. Robertson, M.A., and Mr N. McIntyre of the Hunterian Museum, Glasgow University, who undertook the task of cleaning the iron objects.

- 4 inch by ·3 inch at the thickest at the junction of point and tang (Pl. LXXVII, No. 1).
- 2. Small tanged knife with curved back, portion measuring 2·8 inches long, ·6 inch at the widest, and ·12 inch thick at the back (Pl. LXXVII, No. 2).
- 3. Knife, part of a blade, 2·2 inches long, with a curved back.
- 4. Tanged knife, fragment, mostly tang, 3·6 inches long (Pl. LXXVII, No. 3).
- 5. Small tanged knife with curved back, portion of blade 2·7 inches long (Pl. LXXVII, No. 4).

These knives are similar to those obtained from Dnnadd (see *Proc. Soc. Ant. Scot.*, vol. lxiv, p. 118).

- 6. Part of a large pin, or possibly the butt end of a chisel, measuring 3·5 inches long and ·7 inch by ·5 inch at the butt (Pl. LXXVII, No. 6).
- 7. Spear head, fragment at the junction of blade and open socket, 1·7 inch long.
- 8. Nail, head and part of the shaft, 1·2 inch long.
- 9. Nail or rivet heads. Four examples, the heads being about $\frac{7}{8}$ inch across, and the shafts not more than $\frac{1}{2}$ inch long.
- 10. Part of a metal plate (?), with a rivet at the edge, 1·0 inch by ·6 inch.
- 11. Hollow tube, ·2 inch long and ·5 to ·7 inch thick.
- 12. Needle-like object, 2·4 inches long and ·05 to ·07 inch thick.
- 13. Seven thin lengths of iron, 1 to 2 inches long.
- 14. Three curved lengths of iron 2·6 inches, 2·0 inches, and ·9 inch long.

Iron slag occurred commonly, frequently in small pieces, but several flattened cone-shaped masses as much as 6 inches across were found. From the presence of the slag and the moulds there seems no doubt that the inhabitants of Kildonan I were iron-workers. Two fragments of limestone had been carried within the fort.

Enamel or Paste.—Half of a small disc, ·6 inch diameter, of dull red material with dull yellow markings in two places on the upper edge. The bottom side is rough and flat, the upper side smooth and hollowed, so that the disc is ·1 inch thick at the edge and ·06 inch at the centre (Pl. LXXVII, No. 8).

Spindle Whorl or Weight.—A perforated disc of mica schist, thicker at one edge (·25 to ·6 inch) and flattened at the thicker edge, with a diameter of 1·75 to 1·85 inch. The perforation, ·25 inch diameter, is nearer the thickened edge. One surface suggests that the object may have been split diagonally, and was originally ·6 inch thick (Pl. LXXVIII, No. 5).

Whorl or Toggle.—Thin disc of schist, chipped at one edge, 1·8 inch in diameter, ·2 inch thick, with a small central perforation, ·15 inch in diameter. Eight radial lines are traceable on one side. The perforation seems too small for a whorl, and possibly the object is a toggle or button, affixed by a single cord, knotted at one end (Pl. LXXVIII, No. 6).

Stone Discs.—Shaped discs of various sizes were found.

- 1. Mica schist, 3·4 inches in diameter and ·4 inch thick.
Fragments of two others of slightly smaller diameter.
- 2. (a) Shale, 1·9 inch diameter, ·15 inch thick (Pl. LXXVIII, No. 1).
(b) Shale, 2·0 inches diameter, ·2 inch thick (Pl. LXXVIII, No. 4).
(c) Schist, 1·5 inch diameter, ·2 inch thick.
- 3. Schist, 1·1 inch diameter, ·13 inch thick.

In addition, upwards of a dozen round flat beach pebbles of much the same size as 2 and 3 were found. The first group resemble pot-lids, but 2 and 3 are

too small and may have been used in a game; the smallest (3) will spin like a coin when tossed.

Whetstones and ? Polishers (Pl. LXXVIII, No. 8).—Whetstone of mica schist, 7·5 inches long, rectangular in cross-section (fig. 10, No. 1), with rounded edges, and tapering from 1·2 inch by 1·0 inch at the centre to 1·0 inch by ·7 inch at the end. ·5 inch from one end, which is broken a little, there is a neat perforation, ·2 inch in diameter.

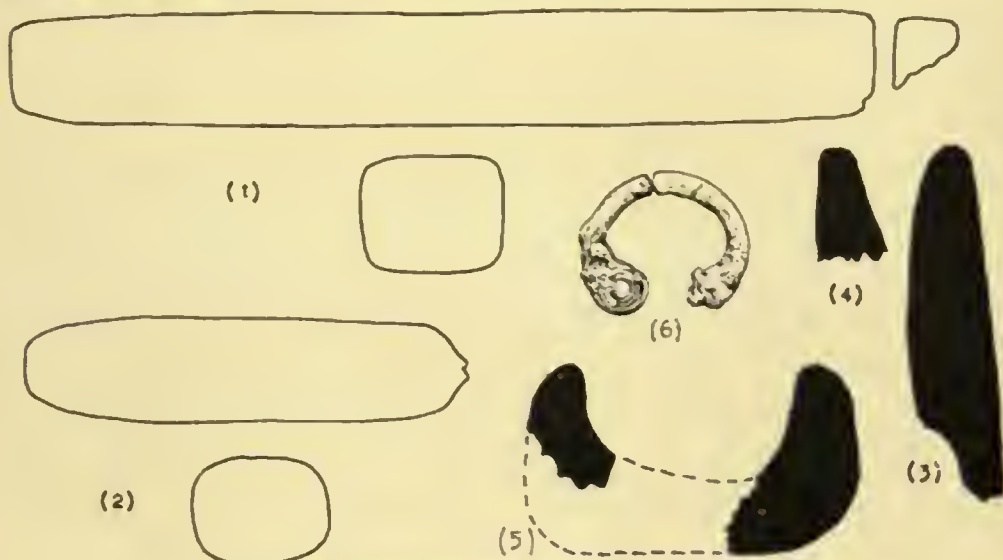


Fig. 10. Relics from the Kildonan Fort. (1.)

1. Sections along and across the Whetstone, Period I.
2. Sections along and across the Whetstone, Period II.
3. Rim, red pottery from beneath the pavement in front of the Cell, Period I (?).
4. Itin, fragment of pottery, Period II.
5. Cross-section of clay cup or crucible, Period I.
6. Bronze Brooch, Period I or II, drawn by H. E. Kilbride-Jones (see Appendix I).

There were found, both at this horizon and the other three, a number of elongated stones about the size of a whetstone; some were very rough, others smooth and rounded at the ends, and might be whetstones or polishers. At the completion of excavations we had a series grading from smooth bars down to rough stones and large pebbles. At Period I horizon they occurred in two sizes:

- (a) From 4 to 6 inches long, and up to 1·7 inch thick.
- (b) About 2 inches long, and up to ·7 inch thick.

Five examples of type (a) and three of type (b) may be classed as reasonably certain implements, while eight very doubtful examples are to be recorded.

Flint.—Chips and flakes occurred at all four horizons, and twenty-nine may be associated with Period I. They are usually grey or buff in colour, one or two were reddish, and two showed signs of heating. One may show secondary flaking (a scraper). The size varies from a grey flake, 2·8 inches by 1·9 inch by ·7 inch, to very small chips, and most are less than 1 inch. In all probability they were used as strike-a-lights, and examples showing signs of working are

probably the remnants of older implements found by chance and brought within the fort for strike-a-lights.

Querns.—Discussed under a separate heading.

Bones.—Many fragments were found, but only one showed signs of working—an antler from which a tine had been sawn (see Appendix III).

Carbon.—Occurred commonly (see Appendix IV).

In addition, pot-boilers, heated and cracked stones, occurred commonly, and sling stones were found. "Hammer-stones," or pounders, or perhaps they may be referred to as heating stones, were sometimes encountered. Quartz chips were scattered throughout the soil at this and the second and third horizons.

PERIOD II.

Domestic Pottery.—Three sherds of thick, coarse, reddish brown ware, showing traces of a smoothly rounded rim (fig. 10, 4).

Moulds.—A dozen fragments of baked clay, probably from moulds.

Lead.—Two pieces of lead rolled into small tubes or cylinders.

1. From a piece .05 inch thick, rolled into a tube .2 to .3 inch in diameter and .7 inch long.
2. From a piece .08 inch thick, rolled into a tube .7 inch in diameter and .7 inch long. A similar fragment was found at Dunadd.

Iron Objects.

1. Knife with curved back, fragment 1.8 inch long (Pl. LXXVII, No. 5).
2. Hollow tube, .7 inch long and .5 inch in diameter. Parts of others were also noted.
3. Nail, broken at the point, 2.9 inches long.
4. Nail head with shaft .7 inch long.
5. Piece 2.5 inches long, .3 inch wide, and .1 inch thick at either end, and a third of the way along there is a sharp shoulder and then a gradual tapering to the other end. Mr A. J. H. Edwards suggested that it was part of a lock.
6. Curved length, 1.5 inch long and .3 inch thick.
7. Loop, much corroded, but apparently about 1.5 inch by 1.2 inch. Fragments of others were noted.

Spindle Whorl.—Of baked clay with no glaze, maximum diameter 1.1 inch, height .6 inch, perforation .25 inch in diameter. Lower side gently rounded, upper side rising markedly near the perforation.

Whetstones and ? Polishers.—*Whetstone*: Greater part of a perforated whetstone, now 4.5 inches long, smooth, oval in cross-section (see fig. 10, No. 2), measuring 1.2 by .9 inch. It is broken off at the perforation, but the other end is smoothly rounded and slightly flattened (Pl. LXXVIII, No. 9).

Smooth elongated stone, 5 inches long, which may represent a whetstone or polisher, and two doubtful examples of a similar nature.

Stone Discs, all schist.

1. 2.5 inches in diameter and .2 inch thick (Pl. LXXVIII, No. 3).
2. 1.0 inch " " .15 " "
3. 1.2 " " " .3 " "
4. .8 " " " .2 " "

Two round flat pebbles.

Flint.—Forty-one pieces were found, of which two may show signs of secondary flaking. Colour: grey, buff, or reddish. Twenty-one occurred together in a corner of the enclosure in front of the cell in a space of about

2 square feet, most of them being large flakes varying from 2·7 to 1·5 inches. Of the remaining twenty only three were more than 1 inch long. One was a small scraper. A small piece of pitchstone was found.

Carbon.—Occurred commonly (see Appendix IV).

Bones.—Fragments, usually small (see Appendix III).

Pot-boilers, heating stones, cracked stones, sling stones, quartz chips were frequently encountered.

PERIOD I OR II.

Domestic Pottery.—A large piece, 3 inches across and up to ·6 inch thick, coarse in texture, and reddish brown in colour; the rim is plainly rounded (see fig. 10, No. 3). Found under the pavement with pebbles. It strongly resembles the sherds of Period II, so that the pavement itself may be of Period II date.

Hollow Tube or Neck of Pottery.—A fragment, in colour bluish grey, red on the outside. About 1 inch across, ·2 inch thick, with a diameter of the tube about ·8 inch.

Bronze Brooch.—Found separately in two halves, forming a penannular brooch of the late seventh century A.D. (see Appendix I). From slightly above the level of the 1b floor, but below the IIb horizon; traces of walling in the neighbourhood may indicate some disturbance. While apparently belonging to the 1a horizon, it may in fact date Period II.

Toggle.—A light perforated disc of black shale, 1·2 inch in diameter, ·1 to ·15 inch thick, with a central perforation ·2 inch in diameter. Found at the same horizon as the brooch (Pl. LXXVIII, No. 2).

Beads.—Part of a dark-blue glass bead, ·3 inch in diameter, perforation ·2 inch in diameter; exterior slightly rounded and ·2 inch long (Pl. LXXVII, No. 9).

About a quarter of a thin cylindrical bead of vitreous paste. The complete bead was probably ·3 inch in diameter, ·35 inch long, with narrow dull yellow raised bands at the two ends, and a blue ground crossed by white bands in the centre (Pl. LXXVII, No. 7).

Large Stone Objects.—The following were found at the II horizon, but in each case appeared to have been incorporated in walling or pavement, and probably belong as artifacts to Period I.

Bar Mould.—Slab of schist, 12 inches by 9 inches by 3 to 7 inches thick. From one edge of the upper surface run two deep grooves, one 3½ inches long and 1 inch wide, the other 1½ inch by ½ inch. From the adjacent side runs another groove, 2½ inches by ¾ inch.

Mortars.—

- (a) Slab of schist, 1 foot 9 inches by 1 foot 6 inches by 5 inches, with a hollow worn in the centre of the upper side, 10 inches across and 2½ inches deep, and another on the under side, 6 inches across and ¾ inch deep. This stone was used in the trip step across the entrance in Period II.
- (b) Irregular piece of schist, 1 foot 5 inches by 1 foot 3 inches and 4 to 10 inches thick, with a deep hollow worn at one end, 8 inches across and 4 inches deep, but partly broken away. Found in the walling on the north side of the ladder passage in Period II.
- (c) Slab of schist, 1 foot 9 inches by 2 feet 7 inches, with a shallow hollow near one edge, 5 inches across and 1 inch deep.
- (d) Irregular piece of schist, 10 inches by 14 inches, with a large hollow on one edge where it is obviously broken across.

Socket Stones.—A slab of schist measuring 1 foot 5 inches by 1 foot 3 inches by 4 inches, split into two parts, and one end broken away. At the broken end there was a perforation, $2\frac{1}{2}$ inches across, and near the opposite end there is a deep socket, $1\frac{1}{2}$ inch wide at the top. Found in the secondary masonry in the entrance in Period II, and may be the socket stone for the gate in Period I; it could be held in place by a peg driven through the perforation.

Fragments of three other socket stones.

On two stones there were deep markings which may have been natural, but on another, 12 inches by 10 inches by 5 inches, there is a curious pear-shaped hollow, 2 inches by 3 inches across, and it may be another bar mould.

Staircase.

The rubbish in the twin staircase probably accumulated in Period I, but owing to the impossibility of establishing this the relics, such as they are, have been listed separately.

Bones in quantity; shells, including whelk, limpet, mussel, and oyster; some carbon in fragments; pot-boilers, heated and cracked stones, sling stones, quartz chips, limestone, and occasional slag.

The Scuray.

A very doubtful whetstone or polisher; three round flat pebbles; fragments of two discs, possibly pot-lids; bones in quantity; shells, including whelk, limpet, mussel, and oyster; pot-boilers; heated and cracked stones; baked clay; and quartz chips.

PERIOD III.

Domestic Pottery.—Two wares found.

1. Light grey ware, upwards of 90 sherds. Found in the interior, in the cell, gallery, and entrance, and on the earth ramp sloping down from the entrance.
2. Light reddish ware, about two dozen fragments. One piece was found immediately under the IIIb floor, on top of the IIIc deposit; all the others came from the cell.

A report on this pottery by Mr G. C. Dunning will be found in Appendix II. He dates it to the end of the thirteenth or to the early fourteenth century A.D.

Iron Objects.—Much-corroded iron occurred occasionally. Only two pieces showed any recognisable shape after treatment.

1. Large roughly oblong piece, 2.5 inches long, 2 inches wide at one end, $1\frac{1}{2}$ inch at the other, .5 inch thick at the wide end, .35 inch at the other.
2. Rather similar wedge-shaped object, 2.7 inches long; the thick end is 1.5 inch wide and .6 inch thick; the thin end is curved outwards, and is 1.8 inch wide and .2 to .3 inch thick.

Iron slag occasionally.

Half-baked clay, a few fragments.

Stone disc, a flat round pebble.

Whetstones or ? Polishers.—No indubitable examples, but two smooth elongated stones, 5 inches and $6\frac{1}{2}$ inches long.

Flint, four small chips.

Jasper quartz, one fragment.

Quern stones (see separate heading).

Pot-boilers, cracked stones, heating or hammer stones, sling stones; bone and carbon in very small pieces, both relatively uncommon; quartz chips.

PERIOD IV.

Three pieces of very much corroded iron; seventeen pieces of slag; two flint chips; a very doubtful example of a whetstone or polisher; a few fragments of carbon and bone; a few shells, mainly whelk; some sling stones and pot-boilers, but comparatively rare; quartz chips.

A small piece of sandstone with two "cup-markings" was found in this pavement. Cup-marked stones are common in Kintyre, and this fragment is probably part of one of these old stones.

All this refuse may simply be overturned Period III material.

The Cell.

The relics are listed separately in view of the fact that the floor had apparently been disturbed in Period III.

Pottery.—Twenty-four small sherds of light red ware and about a dozen of light grey ware, both associated with Period III.

Pear-shaped flint with secondary working—a leaf-shaped arrow-head.

Mould.—A few fragments of baked clay.

Slag.—Fragments of iron slag and a piece of dark glassy slag.

Bones in quantity and large pockets of whelk shells.

Quern Stones.

A number of rotary quern stones were obtained, but owing to the fact that most of them had been incorporated into later walling or pavements after they had been worn out or broken, it is impossible to divide them into periods. The following list indicates the position in which each was found. Sections have been drawn of all the stones which are not too much damaged, i.e. 1, 2, 4 to 7 (see fig. 11).

1. Nearly complete stone of schist, with a central perforation, countersunk, and near the edge a handle hole, 1 inch in diameter, slanting upwards and inwards towards the centre. The under side at the handle hole was broken. Diameter 16 inches, thickness $2\frac{3}{4}$ inches near the handle, and $3\frac{1}{2}$ inches at the opposite side. Found in the 1c infilling, resting against the foundation of the inner revetment to the rampart and 5 feet below the 1b floor.

2. Complete stone of schist, 14 inches in diameter, 2 to $2\frac{1}{2}$ inches thick, no handle hole. Found on floor 1b.

3. Circular stone of schist, 16 inches in diameter, but upper and lower faces too much damaged to estimate the thickness or shape.

4. About a quarter of a sandstone quern, $3\frac{3}{4}$ inches thick, with a radius of about $5\frac{1}{2}$ inches. The edge much less rounded than the above and smaller in diameter. Found at the 111b level.

5. About a third of a sandstone quern stone, $2\frac{1}{4}$ inches thick with a radius of about 4 inches, the central perforation apparently very wide—about $2\frac{1}{2}$ inches; the edge scarcely rounded, and generally similar to No. 4. Apparently from level 111.

6. A third of a stone of schist, radius about $6\frac{1}{2}$ inches, and $2\frac{1}{2}$ inches thick. Found in the 111b pavement.

7. About a third of a stone of schist, radius 8 inches, 2 to 2½ inches thick. Found at turf-level.

8. About half of a much abraded quern stone of schist, diameter about 14 inches, and 2¾ inches thick. Found at turf-level.

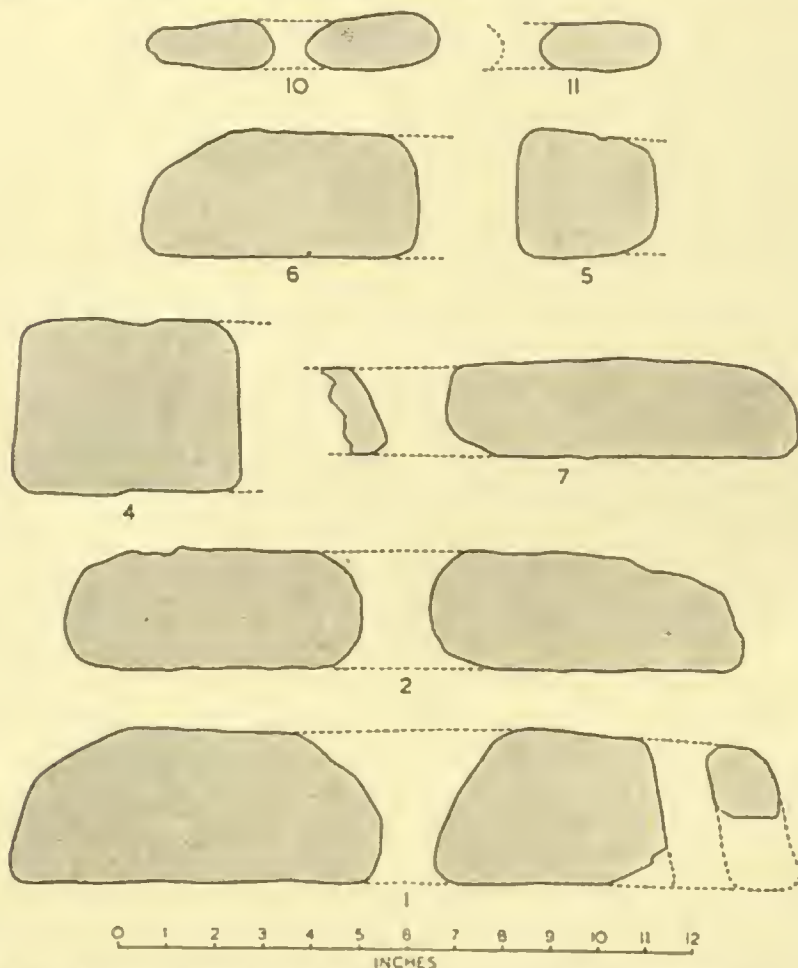


Fig. 11. Sections of Quern Stones and Weights (?) from the Kildonan Fort (see text).

9. About half of a stone of schist, much worn, but apparently about 18 inches diameter, and the hole for the pivot about 1 inch from the centre. Found in the IVb pavement.

These querns seem to fall into two types. Type *a*, 1 to 3 and 6 to 9, probably belongs to Period I; Type *b*, 4 and 5, may possibly be associated with Period III.

In addition, there were found at the Ib horizon two much smaller stones of schist, roughly circular, and perforated approximately at the centre.

10. Diameter 6 inches, thickness up to 1 inch. Countersunk in the centre

for a pear-shaped perforation, .55 to .7 inch across; both surfaces are very rough.

11. About a quarter of another, with a circular perforation, apparently .7 inch across, but the stone itself cannot have been quite circular as the radius varies from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches. Thickness about 1 inch, and with smooth upper and lower faces.

Both may be net sinkers or, just possibly, the remnants of very small rotary quern stones.

A circular stone of schist, about 11 inches in diameter and 3 inches thick, found in the Ib floor, resembled an unperforated quern stone; another, 13 inches in diameter and 3 inches thick, was found in the IIb pavement. Both may be unbored quern stones.

THE DATING.

One of the most striking facts revealed by the excavations is the length of time which elapsed between the construction of the fort and the final occupation. Within this span of many centuries there are four periods or phases to be distinguished and dated as nearly as possible. These four periods add to the interest of the site in many ways, but considering each individually the presence of the other three is a definite disadvantage, since the disturbance caused by successive reconditioning has destroyed much that would have been of great interest on the three lower floors, and, as regards the uppermost, where the chances of survival were better in this respect, we appear to be dealing with nothing more than a cattle-pen. The disturbance is doubly regrettable in that it has rendered the dating very problematical; this matter would have been less serious had relics been found in large numbers, but the poverty of the inhabitants during the whole time the fort was in occupation has been made only too clear in the foregoing survey of artifacts, and the total number of dateable objects is woefully small.

Period III alone can be placed with accuracy from the two types of pottery found at this level; this reconditioning occurred in the late thirteenth or early fourteenth century A.D. Period IV, if it may be so termed, apparently followed immediately, but there is no indication as to how long it lasted. The depth of the IIIc sterile loam would seem to show a comparatively long gap between Periods II and III, presumably of some centuries.

The difficulty of distinguishing the relics of Period I from those of Period II, and the absence of evidence on stratigraphical grounds for a lengthy gap between the two phases, makes it imperative to consider both together. There are but two objects whose manufacture can be dated with any accuracy, the *terra sigillata* and the penannular brooch. They merely indicate that the fort was occupied until after the seventh century A.D., and may have been built before the second century A.D.

The general similarity of the other material to that obtained from Dunadd, occupied perhaps until the ninth century A.D., is more striking than any vague resemblances to rubbish from early Iron Age sites where occupation ceased much earlier. Furthermore, the amount of rubbish and soil associated with the Ia and IIa-c strata is certainly not in such quantity as to suggest a continuous occupation from the second century onwards to perhaps the eighth century. Assuming that the *terra sigillata* had survived as an amulet for a long time, one is tempted to suggest on these grounds that Periods I and II covered approximately the seventh and eighth centuries A.D.

There are, however, a number of difficulties. In the first place, *terra sigillata* has been discovered on a number of Scottish sites which belong to the centuries about the beginning of the Christian Era, and it is barely justifiable to attach so little significance to the sherd from Kildonan. Secondly, the brooch may have been displaced from its true horizon, and date the second phase alone. Thirdly, whatever the relics alone may suggest, the general character of the fort considered separately would, on the whole, indicate an earlier date than the seventh century; this latter point must be considered in some detail.

The position, size, and general proportions of the dún differ in no very significant ways from the small stone forts of the west of Scotland which Professor Childe has called collectively "Castles,"¹ and which appear to belong to the early Iron Age. Now the Broch type, which seems to be a specialised form of a "Castle," was normally provided with galleries, cells, a staircase, and an entrance with door-checks and bar-holes. The development of this specialised type has never been worked out, and at the beginning of excavations at Kildonan it was hoped to throw some light upon the problem, so striking were the superficial indications of a fort closely related to the Broch. It is quite clear, however, that Kildonan is too late to be of significance in this respect, since the round towers were fully developed by Roman times. Furthermore, the divergences from this highly specialised type are too great to establish a direct relation, and to find the true antecedents to the dún at Kildonan we must look elsewhere.

It is to be remembered that cells occur in the "Castle" at Ardifuar, the south fort on Luing, and at Druim an Duin, to quote well-known examples near Kintyre; galleries have been noted at Dunburgisdale on Bute, at Castlehaven in Kirkeudbright, and in the "Galleried Dúns" of Skye and the Hebrides; staircases occur at South Luing, Ardifuar, and elsewhere; an entrance with door-checks and bar-holes is quite a normal feature in a "Castle"; the "median face" may be far from rare, in view of the fact that so few of these stone-built ramparts have been investigated.

¹ V. G. Childe, *The Prehistory of Scotland*, p. 107.

It might be suggested that the parallels to the Broch are equally parallels to the parent "Castle" type. Since the specialised Broch form was fully developed by Roman times, there is a marked hiatus if we are to place this specialised Kildonan type as late as the seventh century. Again, emphasis has more than once been placed upon the fact that Kildonan is a carefully integrated or co-ordinated structure, with a singular freshness of the individual features, and it is hard to conceive of it as a late freakish survival, or to assign a date seven centuries after the "Castles," though appearances may be misleading.

Accepting, then, this rather obvious conclusion that the builders of Kildonan embodied in their dūn a number of traits current at the time of the "Castles," to turn now to the divergences from the uncestral type. The twin staircase is unusual, but not a startling development; the "median face" may be a comparative rarity, but is merely a simplification of the gallery; the overhanging door-check would seem to be abnormal, but in the present state of our knowledge it would be unwise to attach too much importance to it; the Ic infilling may be more reminiscent of a mediæval castle than a prehistoric fort, but it is an obvious expedient, and the absence of parallels in Scotland, though not in Ireland, may be due to lack of knowledge or faulty excavation in the past—the records of the excavations at Druin an Duin and King's Cross Point are regrettably vague on this point. In short, the divergences from the early "Castle" type are notable, but scarcely so marked as to suggest a long evolutionary period.

The obvious parallels to the "Galleried Dūns" have not been stressed, in view of the fact that these forts are an unsolved problem in themselves.

Summarising, all that the writer can say is that the fort at Kildonan may be as late as the seventh century, but that there are indications of an earlier date, though hardly before the second or third century A.D., since the relics as a whole are not typical of the normal early Iron Age sites in Scotland. It is within this period that the Scots from Ireland were crossing to Argyll, and Kintyre and Antrim became parts of the same cultural province. A consideration of the historical background allows several alternatives from which to choose:

1. That the fort was erected by the natives possibly as a defence against Scottish raiders or invaders; Period II was presumably a Scottish reoccupation.

It will be remembered that the dūn is fairly well hidden at the head of the bay, and it is one of the remarkable features of the site that from the rampart there is a magnificent view of the sea from near the Mull to a point far up Kilbrannan Sound; it is an almost uninterrupted sea horizon of nearly 180°. The bay itself is very rocky to act as a haven, and far better landing-places can be found within a mile; the products of trade or

piracy are almost non-existent: the inhabitants appear to have been agriculturalists and stock-raisers, and possibly longshore fishermen.

2. That the Scots themselves erected the fort, and Period II was a reoccupation about the time of the Norse raids, or merely a later phase of the Scottic period.

The "castle complex," Childe has suggested, may have been a cultural drift from the south, and the resemblances to the "Castles" may be more directly to those of Ireland than Scotland.

3. That the fort was erected after the Scottic migrations, and represents a blending of native and Scottic influences.

Neither alternative solves what is perhaps the major problem—that of the Galleried Duns in general, and, in particular, why the inhabitants of Kintyre built a fort for which there are apparently no local parallels. Galleried Duns certainly seem to be comparative rarities, and while excavation might reveal further examples, diligent search in Argyllshire has left the writer unrewarded, though one or two sites are suggestive. It was in the hopes that others might find the data valuable in this respect that the surface indications of the Kildonan dun, before excavations commenced, were plotted with care.

CONCLUSION.

To draw conclusions from a site of such complexity is to skate upon extremely thin ice. The archaeology of the Dark Ages is in its infancy, and perhaps in the future, after further excavations in the west of Scotland, the Kildonan site will assume its true perspective. Had a long series of relics been placed on record, the various occupation levels would have provided a most useful series for reference purposes; as it is, the fort must be taken as an earnest of things to come. Yet several points have emerged and must not be overlooked when an *impasse* with regard to the dating has been reached.

In the first place, the investigation has shown that the technique of fort construction could be more involved than our knowledge has on the whole led us to believe. The gallery and median face, the suggestions of a breastwork, the twin staircase and ladder, the entrance with its peculiar gate arrangements, the cell, the deep infilling below the primary floor, and the seaway, all occurring together, suggest a type of fort which might almost vie with the Broch as being one of the supreme achievements of the "castle complex," as Childe has named it. It appears to represent, not an epilogue to the Broch phase, but another specialisation and development of the parent culture. The fort was clearly occupied more or less in its pristine state until perhaps the eighth or ninth century, and this strongly

suggests that the "age" of the small stone forts of the west of Scotland must be prolonged until the beginnings of what is often thought of as the "age" of the mediæval castle. The first reference to a stronghold at Dunaverty near the Mull of Kintyre takes us back apparently to the eighth century, since when the site was occupied more or less continuously until the massacre of the Macdonald garrison in 1647. Clearly it is possible to envisage a gradual transition from the stone forts of the "castle complex" to the strongholds of the type of Kildonan, which continued in occupation until the period when authenticated examples of "mediæval castles" were founded. It seems a far cry from Early Iron Age fort to Edwardian castle in the south of England, but in the west of Scotland the connection between stone fort and mediæval stronghold may be much more direct.

Secondly, the study of types of ramparts is carried perhaps a stage further. The median face may not be a new discovery, but at Kildonan it is a prominent feature and a most illuminating example. Again, the gallery, in the writer's view, is to be considered primarily as a structural feature, and that the *structural* significance of a gallery was known and appreciated at this time may not be without importance in the study of the Broch.

Thirdly, the individual features of the fort, such as the entrance, cell, staircase, and gallery, hark back to the pre-Scottic period, yet it is at least possible that the fort at Kildonan was post-Roman by some centuries; we are on very uncertain ground, but there may be an indication that the irruption of the Scots into Argyll did not produce such a marked change as some of our history books would suggest.

Fourthly, the apparent poverty of the occupants of the dùn at Kildonan throughout its long history deserves comment in view of the magnificence of the rampart. It may be more than a coincidence that the archaeology of the late pre-historic period and the Dark Ages in Scotland has so long remained obscure.

Finally, a fifth conclusion must be added to this speculative review. The two forts on either point of Kildonan Bay, within a quarter of a mile from the galleried dùn, provide a complementary study. If they are by some strange chance contemporaries, the excavation would throw some light upon Kildonan itself, and would carry interesting implications with regard to the density of population. If not, as is far more probable, then with the three occupations at Kildonan a long series of "cross-sections" of the cultural history of one locality would have been established—no small achievement in the present state of the archaeology of the west of Scotland.

ACKNOWLEDGMENTS.

Often during the last three years have I wished that the first excavations of which I have personally been in charge had been conducted on a site of less complexity than Kildonan, and I have asked and received help from so many quarters that a full list of acknowledgments would far surpass the limit of editorial tolerance. To his Grace the Duke of Argyll for permission to excavate; to the Members of the Kintyre Antiquarian Society, and especially Mr J. R. Cunningham, for their financial help, encouragement, and hospitality; to Professor V. G. Childe for his continued interest and most valuable help, advice, and financial assistance; to my numerous friends, especially Mr N. J. H. McCulloch and Dr J. Orr, who have assisted on the site, and to Mr A. Wilson and Mr S. Galbraith, my workmen; to Mr J. H. Mackenzie, Curator of Campbelltown Museum; to Mr J. S. Richardson, Mr A. J. H. Edwards, Mr H. E. Kilbride-Jones, Mr G. C. Dunning, Miss A. S. Robertson, Miss M. I. Platt, Mr M. Y. Orr, for their help with the relics; to Mr and Mrs J. Semple of Ballochgar Farm, with whom I stayed; to those especially, and to all who have helped to make this report possible, I offer my most sincere thanks.

APPENDIX I.

REPORT ON PENANNULAR BROOCH FROM KILDONAN.

By H. E. KILBRIDE-JONES.

The brooch is in an extremely poor state of preservation, and the right half is considerably more weathered than is the left half. The brooch is also unusually small, measuring only 32 mm. in greatest diameter. Little remains to serve as a guide to its date except a small uncorroded portion of the left-hand terminal. The terminals were round, and they were ornamented with three concentric circles in relief, and done in the *kerbschnitt* technique, surrounding a slightly domed centre. The hoop, like the terminals, is flat on the reverse side, and midway between the two terminals there appear to be indications of the former existence of a small decorated panel. These details can be most nearly paralleled on the eighth-century brooch from Croy, Inverness-shire (*Arch.*, 65, 236, fig. 174). There is little doubt, however, that the Kildonan brooch is more closely related to a type of native-made brooch showing Frankish influence, and represented by a specimen from Co. Antrim (*B.M. Anglo-Saxon Guide*, 133, fig. 174), a type which, in Britain, probably does not long post-date the Migration Period. Perhaps it belongs to the early seventh century, in view of the technique employed in decorating it, and also since ornithomorphic fibulae in the Frankish style produced no lasting effect on

contemporary art in Britain, although that effect tended to persist in Ireland. The Kildonan brooch is approximately the same size as the Co. Antrim specimen, but the hoop has thickened and the terminals have lost the beaks. Sparse though these data are, it would nevertheless probably be correct to say that the Kildonan brooch belongs to the latter half of the seventh century.

APPENDIX II.

REPORT ON MEDIEVAL POTTERY FROM KILDONAN FORT,
CAMPBELTOWN, KINTYRE. By G. C. DUNNING.1. *Cooking-pot from filling of Cell.*

Fig. 12.—Cooking-pot restored from fragments of rim and upper part of shoulder, and separate fragments of base. The ware is light red to buff in section, mixed with fine sand, and the surface is smooth and buff, discoloured grey by fire round the rim and on the base; the inner surface has a white coating, probably to render the vessel less porous. The pot is carefully wheel-turned, the sides are thin, and the outer surface on the shoulder is marked by horizontal rilling or fluting made whilst the pot was turning on the wheel. The rim is everted, thickened, and angular, and almost square in section; it has an internal bevel and a small beading on the inner edge. The base is deeply sagging and the base-angle is sharp. The pot is $4\frac{1}{2}$ inches rim diameter, about $6\frac{1}{2}$ inches shoulder diameter, and about $6\frac{1}{4}$ inches high.



Fig. 12. Cooking-pot,
Period III. (1.)

It is possible to date the pot within fairly close limits. In southern England cooking-pots of similar proportions and with similar angular rims are dated to the middle of late thirteenth century.¹ In Scotland the closest analogy is a small cooking-pot remarkably similar to the Kildonan vessel, but with green glaze on the shoulder;² it was found at Ayr, and contained coins of Alexander III., John Baliol, and Edward I. Cooking-pots of the same character found elsewhere in Scotland are referred to the thirteenth or early fourteenth century.³ The period 1250–1350 may be suggested as the most probable date for the Kildonan cooking-pot.

¹ Rayleigh Castle, Essex, where occupation ceased shortly before 1277 (*Trans. Essex Arch. Soc.*, N.S., vol. xii, p. 182, fig. 7). Bungay Castle, Suffolk, pottery from layer dated 1294 (*Proc. Suffolk Inst. of Arch.*, vol. xxii, p. 331, figs. 1–9).

² *Proc. Soc. Ant. Scot.*, vol. lvi, p. 30, fig. 4, 3.

³ *Ibid.*, figs. 1, 4, and 5.

2. *Jug from Level III.*

Fig. 13.—Jug restored from fragments of rim, neck, joined pieces of shoulder and side, and fragments of base. The ware is light grey in section, yellow or buff towards the outer surface, and mixed with fine dark-coloured grit which speckles the surface. The inside is grey and shows wheel-marks. The outer surface is yellow with buff tones and is discoloured grey in patches. The neck and shoulder fragments have well-marked external fluting, similar



Fig. 13. Jug, Period III. (L.)

but more pronounced than on the cooking-pot from the cell filling. Moreover, glaze is present on a fragment of neck and the upper part of the shoulder; the glaze appears to be only in patches, but is rather decayed, and is fairly thick and even, dark brown in colour.

The rim is vertical with rounded lip, and is thickened outside to form an angle. The neck appears to have been fairly cylindrical, passing gradually into a high rounded shoulder. The base sags deeply with sharp base-angle, of which there is sufficient to show that thumb-pressing was absent unless it was abnormally widely spaced. One large shoulder fragment has a thickening for the lower end of a

handle, and the inside of the wall is pressed out by the potter's fingers in securing its attachment to the pot. It is possible to obtain rim, shoulder, and base diameters independently, so that the only approximate measurement is the height; the jug is $4\frac{3}{4}$ inches rim diameter, $10\frac{3}{4}$ inches shoulder diameter, and about $12\frac{1}{2}$ inches high. The restoration could be made slightly taller, but not shorter.

The stratigraphical evidence at Kildonan indicates that the cooking-pot and jug are of about the same date, for sherds of both classes were found amongst the stones forming the pavement of Period III in the cell. This evidence is substantiated by the similar general character and technical finish (fluting) of both vessels. The jug is therefore referred to the same period as the cooking-pot—that is, to the late thirteenth or early fourteenth century. Analogous jugs of this date are known from Scotland. Com-

parison may be made with a jug found at Carsphairn, Kirkcubrightshire,¹ containing coins of not later than the early fourteenth century. This vessel is similar in proportions to the Kildonan jug, and has a cylindrical neck, squat globular body, and partial thumbing of the base-angle. Close parallels for the rim-section of the Kildonan jug are provided by sherds from a mound at Kilsnuck, Irvine, Ayrshire,² assigned to the thirteenth or fourteenth century.

APPENDIX III.

THE BONES AND SHELLS.

Miss M. I. Platt of the Natural History Department, the Royal Scottish Museum, Edinburgh, very kindly undertook the laborious task of identifying the bones and shells which were obtained during the course of the excavations. Small fragments of bone, sometimes burnt, occurred at all four occupation levels, and larger pieces and sometimes whole bones were very common in the Ic filling, and in the filling of the cell, seaway, and staircase. Only one piece showed signs of working; it was a portion of red deer antler (found in the Ic filling) from which a tine had been sawn. One ox horn-core was found (in the seaway), and proved to be of the short-horn variety. One bone (Period I) was a phalanx of the common seal, *Phoca vitulina* L. The classified list below has been constructed from the data provided by Miss Platt.

	Ox.	Red Deer.	Sheep.	Pig.	Pony.	Seal.	Shells: <i>Littorina littorea</i> (L.), "Whelk."	<i>Helix aspera</i> , Müller.	<i>Patella vulgata</i> L., "Limpet."	<i>OSTREA edulis</i> L.	<i>Buccinum undatum</i> <i>littorale</i> , King.	<i>Gibbula cineraria</i> .
Period I	x	x	x	x	x	x	x	x	x	x	x	x
Period II	x		x				x		x			
Periods I and II	x		x	x			x		x			
Cell	x		x	x			x		x			
Seaway	x	x	x	x			x		x	x	x	
Staircase	x	x	x	x			x		x	x		
Period III		(fragments of bone)					x		x			
Period IV		(fragments of bone)					x		x			

¹ *Proceedings*, vol. xlviii, p. 308, fig. 2.

² *Ibid.*, vol. lii, p. 68, fig. 3.

APPENDIX IV.

THE CHARCOAL.

The fragments were submitted to Mr M. Y. Orr of the Royal Botanic Garden, Edinburgh, who has grouped them as follows:—

	Willow- Poplar.	Hazel.	Birch.	Oak.	Ash.	Lime.
Period I	50	12	6	4	1	1?
Period II	12	3	..	1	1	..
Periods I or II	34	3	..	2	..	..
Period III	3	..	..	..	..	..

Willow and poplar cannot be easily distinguished.

There is some doubt as to the authenticity of the fragment of lime of Period I, not to the identification.

The preponderance of willow-poplar is probably to be explained by the nature of the ground, which is badly drained on the south and west. Hazel, ash, oak, and birch grow on the hillside behind the fort.

MONDAY, 10th April 1939.

ALEXANDER O. CURLE, C.V.O., LL.D., Vice-President,
in the Chair.

A Ballot having been taken, the following were elected Fellows: Charles B. R. Butchart; H. J. H. Drummond, M.A.; Angus MacLeod; F. Muirhead Moffat; Ferdinand Muller; Eric B. Porter; Daniel J. Sleigh.

The Accounts of the Society for the year 1937-38, which had been circulated amongst the Fellows, were approved.

Donations to the Museum and Library, as per lists at end of volume, were intimated and thanks voted to the Donors, and Purchases for the Library were announced.

The following Communications were read:—

I.

TWO BRONZE AGE BURIALS. BY ROBERT B. K. STEVENSON,
M.A., F.S.A. SCOT., KEEPER OF THE MUSEUM.

1. OUTERSTON HILL, MIDLOTHIAN.

In August 1938 Mr Adam Anderson, shepherd, noticed an urn protruding in the sheep-rubbed face of an old gravel pit 200 yards north-west of his house at Outerston Hill. On being informed, Mr J. W. Murray of Outerston told one of our Fellows, Mr J. C. Kay, who visited the site and recognised the importance of the discovery. The urn was then left *in situ*

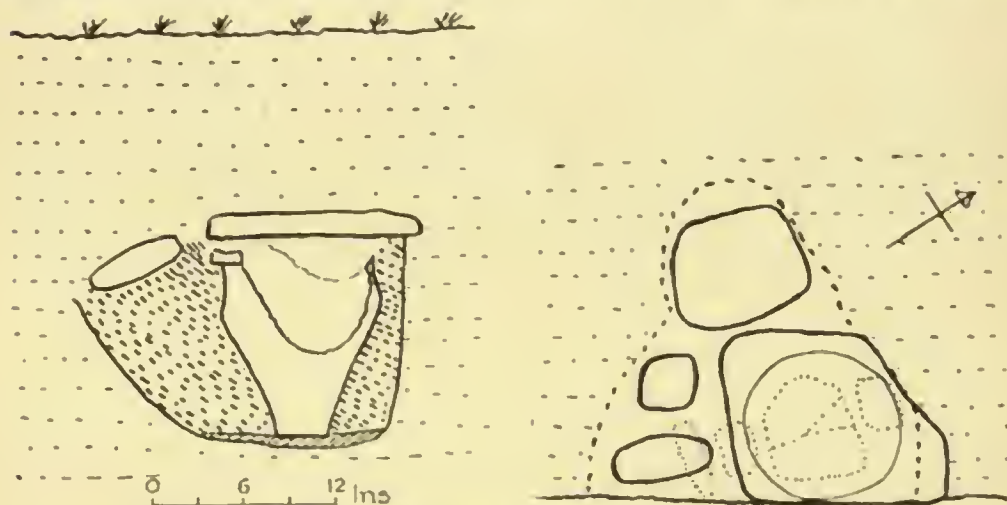


Fig. 1. Elevation and plan of Outerston Hill burial.

till the Trustees of the Arniston Estate could decide what to do with it. After they had informed the Museum Authorities, I went and removed the urn in the middle of November.

The site was on the crest of a gravel ridge running parallel to the Moorfoot range and forming the edge of what appears to the eye as a fairly level piece of rough pastureland stretching to the hills, while on the other side the ground slopes down toward Temple. The view of Moorfoots, Pentlands, and the plain of Lothian is very fine.

Below a slab of stone roughly 1 foot square and 2½ inches thick, whose top was 1 foot below the turf and one edge of which overlapped undisturbed gravel, was a cinerary urn erect and half-full of clean burnt bones of an

adult,¹ the other half being quite empty and free of earth. It stood on the largest of four paving-stones, to one side of a pit dug in the gravel, 1 foot 3 inches deep and 1 foot 10 inches across at the top (fig. 1). The pit had been filled with the remains of the pyre—burnt earth, hazel charcoal (*Corylus avellana*), burnt pebbles, and a very few tiny fragments of bone. The numerous pebbles may indicate that the cremation took place nearby, on the gravel ridge. Besides the slab already mentioned, the pit was closed by a rounded cobble 7 inches in length and a more massive block 9 by 12 by 4 inches, which were laid at a slant, their highest parts being adjacent to the slab. Between these two lay a smaller squarish block. Above these stones was clean gravel.

Besides the ashes, the urn contained part of a calcined flint flake $1\frac{1}{2}$ by $1\frac{1}{4}$ inch with secondary working along the upper surface of both sides (fig. 2), also a broken piece of unburnt ox or deer bone 2 inches long (recently fractured), which had been split and is rubbed in places, and which suggests the thick end of a coarse pin or bodkin.



Fig. 2. Burnt Flint, Outerslon Hill. (1:1.)

A puzzling feature was the presence among the burnt material in the pit of large pieces of a smashed pottery vessel. A majority of the pieces were lying below the thick block, which covered a sort of recess. This recess was, however, not an earlier burial disturbed, for its filling was exactly the same as that of the rest of the pit. The sherds were distorted and cracked by heat, and so had clearly been burnt on the pyre. Such a burnt offering of pottery has hardly ever been recorded, but several instances have recently been noted by Mrs Piggott in a Deverel-Rimbury urnfield at Latch Farm, Hants.²

The cinerary urn is of the overhanging-rim type (Pl. LXXIX, 1). Much of the upper part of the vessel, including most of the rim owing to the pressure of the covering slab, is missing. What remains is $11\frac{1}{4}$ inches in height, estimated rim diameter $10\frac{1}{4}$ inches, $9\frac{3}{4}$ inches at the shoulder, and $3\frac{3}{4}$ inches across the base. The overhanging rim has been made by applying a layer of clay $\frac{3}{8}$ inch thick to the upper part of the neck. The rim is decorated with a varied and neatly made pattern of triangles and vertical lines, which is not closely paralleled. The body is brown, and burnished though containing large grits.

The auxiliary vessel is of rather exceptional type (Pl. LXXIX, 2, and fig. 4, 16). The base and about a quarter of the rest of the vessel are missing, and the distortion caused by the secondary firing also makes the reconstructed

¹ The following can be identified: a number of the flat bones of the skull, fragment of mandible, pieces of vertebrae and ribs, fragments of forearm bones, and a piece of the head of a femur.

² *Proceedings of the Prehistoric Society*, 1938, pp. 180-1.

measurements approximate only: height 7 inches, diameter at rim 5 inches, at horizontal rib $5\frac{1}{2}$ inches, at base $3\frac{1}{2}$ inches. Immediately below the plain rounded rim—which is not bevelled like a food-vessel—is a continuous zigzag whipped cord impression. Two and a half inches below the rim is a horizontal raised rib, partly pressed out from the inside, on top of and underneath which are oblique incised strokes, the uppermost fairly deep. Above and below the rib the vessel is decorated with six rows respectively of oblique strokes, each row being defined by a continuous horizontal line, all incised with a sharp tool. The only undecorated part of the vessel is the bottom $1\frac{1}{4}$ inch. The walls, about $\frac{3}{8}$ inch thick, are partly bright red, partly grey, the latter being in places just a thin film.¹ There is a proportion of large grits, but the surface is smooth. Although reminding one of the cordons of a cordoned urn, the rib is probably quite unconnected with that class of urn which is generally recognised as late in the series. For the covering of the whole vessel with decoration is more reminiscent of food-vessels on which oblique rows of incisions outlined with horizontal lines occur, as also whipped cord zigzags, although indeed both motifs are found equally frequently on cinerary urns. Moreover, the cinerary urn found in this grave is typologically not far from the beginning of the series. We may thus discount any real affinity with the Deverel-Rimbury rite mentioned above.

I have to thank Professor Low for examining and reporting on the bones; Mr M. Y. Orr on the charcoal; Miss Platt on the piece of worked bone; also Mr Anderson and Mr Murray for public-spiritedly leaving the urn protected *in situ* till it could be thoroughly examined, and to the former for assistance in digging it out. Lastly, thanks are due to the Trustees of the Arncliffe Estate for presenting the contents of the grave to the National Museum.

2. WEST PINKERTON, BROXBURN, EAST LOTHIAN.

At the beginning of January 1939 a portion of a beaker was sent to the Museum by Mr J. Rennie of South Belton, near Dunbar, whereupon I was sent to examine the site. At the end of December a tractor on the farm of West (Little) Pinkerton, near Broxburn, Dunbar, stove in the top of a short cist, and the piece of beaker was found in the corner.

The site is on the rising ground about a mile from the sea, to which there is a wide view. About 250 yards uphill to the south-west are the farm buildings of West Pinkerton.

There was no trace of a mound or cairn. The cover-stone of the cist was 2 feet below the surface, but only one corner remained in position, the rest having broken and fallen in so long ago as not to leave the slightest

¹ Similar mottling, possibly also due to re-firing, occurs on a few other vessels in the Museum—

4 incense cups and a very miniature food-vessel.

depression on the surface. It was part of this corner that the tractor broke into. The cover had been about 2 inches thick and 6 feet 4 inches long, and seemed to extend 1 foot 9 inches on the north-west and 10 inches on the south-east beyond the side-slabs, giving a breadth of at least $5\frac{1}{2}$ feet. Like the wall-slabs, which were 2 feet high, it was a single very even piece of yellow flaggy sandstone, probably carboniferous, which may have been quarried not far from the site of the grave. The long axis of the cist was 40° east of north, magnetic, *i.e.* towards the sea. The wall-slabs were $1\frac{1}{4}$ inch thick, except the south-west, which being only 1 inch had collapsed long ago. The south-west end-slab was 3 feet 1 inch wide and the north-east 2 feet 11 inches. They were 4 feet 9 inches apart on the north-west and 4 feet 6 inches on the south-east, and fitted fairly evenly, without any form of luting, between the side-slabs, which extended some 6 inches beyond them. The floor of the cist was almost entirely covered by a slab of grey flaggy sandstone $\frac{1}{2}$ inch thick. Where this did not quite reach the sides, small additional pieces had been laid. This slab rested directly on the natural gravelly subsoil into which the cist had been sunk.

Directly on the floor were the remains of two middle-aged brachycranial males, heads to the north-east facing south-east (Pl. LXXIX, 4). The bones of the first had been laid along the south-east side-slab, no bit more than 9 inches from it. Part of the left foot was in articulation (unfortunately not shown in the photograph), but the left calcaneus lay against the skull at the other end of the cist. All the other bones were out of place. Thus the femurs lay end to end, alongside the corresponding tibiae, and beyond, near the left foot, were the two humeri side by side. It is clear that the bones had been picked up individually, except the foot mentioned, and laid carefully aside after skeletalisation.

Presumably this had been done at the burial of the second individual, for his skeleton lay undisturbed in a contracted position on its left side. It occupied the rest of the cist except for $1\frac{1}{2}$ foot beyond its feet. The right hand was up to the face. Behind the shoulders, as very commonly, had stood a beaker with a brown deposit in the bottom.

The skulls had been protected by a piece of the cover remaining in position and by another piece resting obliquely against the end-slab. An oblique piece had also protected the bones of the first skeleton, while much of the second had been crushed by part of the cover lying directly on top of it with not a speck of earth beneath. It was obvious that the position of the first skeleton could not have been due to a late casual disturbance. The size of the cist even suggests that the constructors may have anticipated the secondary interment, which may have taken place after an interval of a very few years. Corrie found two disturbed and one intact skeletons in a cist at West Poldrute, Orkney, but decided against a Bronze Age date partly owing to the height of the individuals, 5 feet $4\frac{1}{2}$ inches and 5 feet



1 0 1 2 3 inches



1 0 1 2 inches

1-2. Outerston Hill.



1 0 1 2 inches



3-4. West Pinkerton.

ROBERT B. K. STEVENSON.

PLATE LXXIX.

[To face page 232.

6 inches;¹ but our first skeleton may have been 5 feet 8 inches. It will be remembered that Greenwell and Mortimer frequently found several beaker interments under the same barrow and sometimes even in the same grave.² Sometimes, however, a heap of bones was found near a skeleton.

The beaker as reconstructed measures $6\frac{1}{2}$ inches in height, $5\frac{1}{2}$ inches rim diameter, 5 inches at the bulge, and $3\frac{1}{2}$ inches at the base (Pl. LXXIX, 3, and fig. 3, 2). It is red outside, but was apparently overfired and is black inside. Much has split along the lines of building. It is ornamented on the top of the flat rim by a single criss-cross. On the neck is first a row of parallel oblique strokes cut at the middle by a horizontal line, with another along the lower ends; then two rows of vertical chevrons, each with a horizontal line above and below. On the bulge is another chevron band with two horizontal lines above and below, while above the base are four horizontal lines. The whole decoration has been executed with the usual coggled instrument.

I must thank Professor Low for once again reporting on the skeletal material, and Dr J. Pringle for identifying the stones; also Mr Rennie for promptly acquainting the Museum of the discovery while leaving it undisturbed, and the grieve, Mr Fairbairn, for assistance during the excavation. Thanks are further due to His Grace the Duke of Roxburghe for adding the beaker to the National Collection.

3. THE BUILDING UP OF PREHISTORIC POTTERY.

The chief interest of the beaker is that, owing to the way in which it has split, it shows completely how it had been made in stages. Surprisingly little attention has been paid to the extent and manner in which prehistoric pots were built up, and some remarks may be all the more interesting as the matter has already been referred to this year before the Society both by Professor Childe and Mr Calder.

Previously Professor Childe remarked on it as a special feature at Skara Brae.³ Dr Callander drew attention to three other instances which he had come across, a food-vessel, a cinerary urn, and an Iron Age pot.⁴ In 1931 Piggott recognised it as a characteristic of Neolithic B, and added that it was a "trick of potting that persisted in England into the Bronze Age."⁵

¹ *Proc. Soc. Ant. Scot.*, vol. lxiii, 1928-29, p. 190. The taller individual had Nordic features and was aged about 18. For the physical features of the beaker folk, see Walmesley and Mosey, *Ulster Journal of Archaeology*, 1930, p. 96.

² Cited listed Scottish instances of multiple interments in short cists, *Proc. Soc. Ant. Scot.*, vol. xxxii, 1897-98, p. 50. In addition there is Cranfil, near Kirkwall, *ibid.*, vol. xlv, 1900-10, p. 215; and Ferniehill, Dumfriesshire, *ibid.*, vol. lvii, 1922-23, p. 209. Greenwell, *British Barrows*, lxi; Mortimer, *Forty Years' Researches*, 81, and c. 63.

³ *Proc. Soc. Ant. Scot.*, vol. lxiii, 1928-29, p. 269.

⁴ *Ibid.*, vol. lxiv, 1929-30, pp. 193-5.

⁵ *Archaeological Journal*, vol. lxxxiii, 1931, p. 112; also Childe, *ibid.*, pp. 58-9.

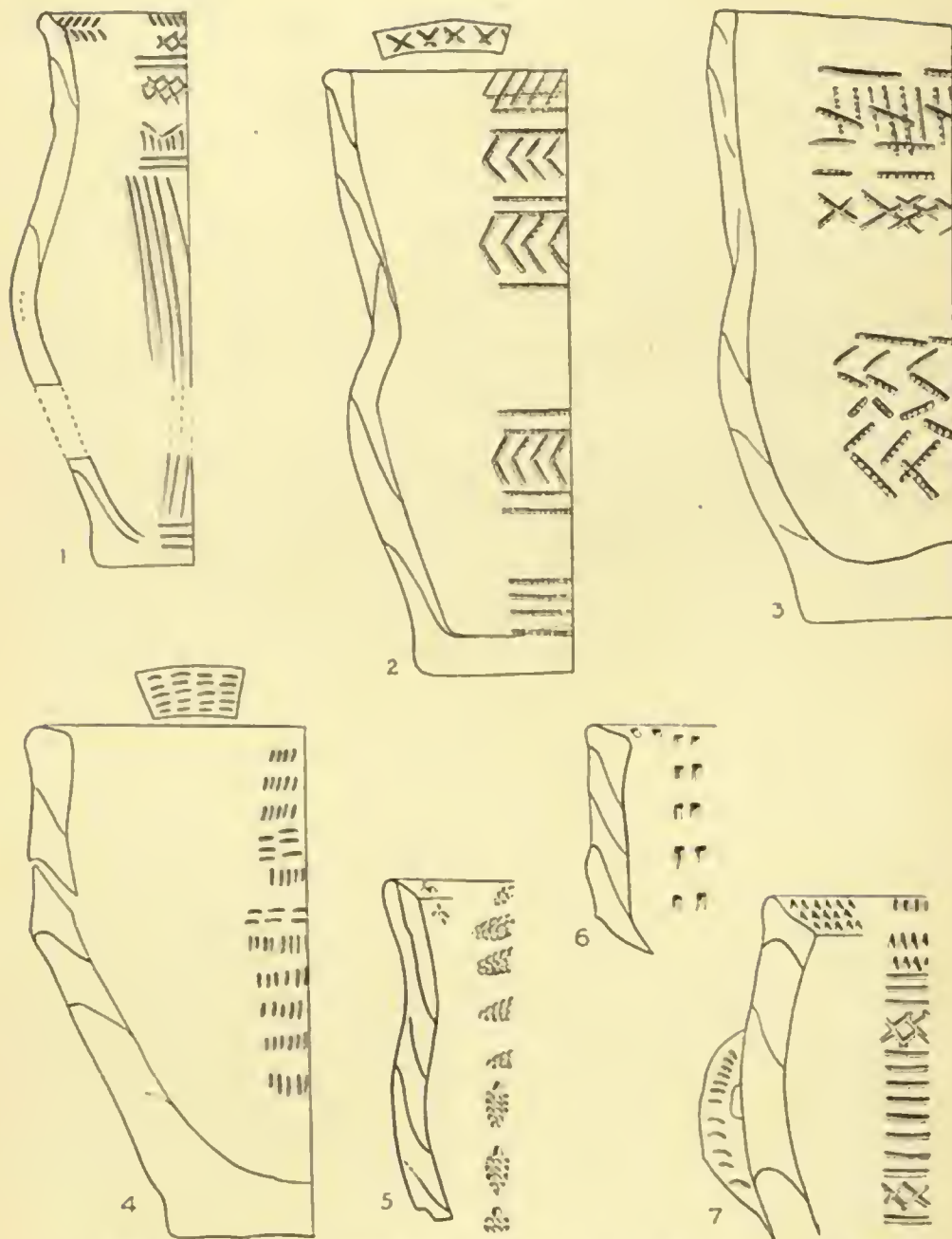


Fig. 3. Pots showing building stages: 1-3, Beakers; 4-7, Food-vessels. (1:2.)



Fig. 4. Pots showing building stages: 1, Rinyo; 2-7, Cinerary urns; 8, Incense cup; 9, Neolithic B; 10-15, Early Iron Age; 16, Outerston Hill. (1:3.)

Dr Mears has recently given a full account of a cinerary urn from Fife.¹ Dr Curle noted that the Late Bronze Age domestic pots at Jarlshof had been built in zones.² Miss Benton,³ and recently Callander⁴ and Sheppard,⁵ have noted Iron Age examples at Covesea, Eday, and Eastbourn, Yorks, respectively; Sheppard refers to a food-vessel illustrated without comment by Mortimer, and speaks of coiling, a matter which will be mentioned again later. It is true that there has thus been an increasing awareness of the building technique, but in 1937 Dr Callander summed up the position by saying: "In making the sepulchral and domestic vessels of the Stone, Bronze, and Early Iron Ages in Scotland, generally it was the practice to work up the clay from the base to the lip so that the wall was homogeneous, just as in wheel-turned pottery. But, as I have already pointed out, another method was occasionally employed both in the Bronze and Iron Ages."

Beakers had not been specifically mentioned, and so, starting with the West Pinkerton example, I looked over most of the broken and fragmentary beakers in the Museum, and then at other classes of pottery too, whole or fully restored vessels being perforce omitted. Often very close inspection is needed, not only because the better made a pot is the less its joints are visible and a source of weakness, but also because of the tendency of the clay to produce non-constructural fissures. Certain and probable specimens, however, were sufficiently numerous to substantiate the *a priori* supposition that all our prehistoric pots had been built in stages. The only exception was the Neolithic A group, which gave no examples except, as Piggott has already noted,⁷ the possibility of joins at the shoulder.⁸

The number of examples of stages in the different classes were: beakers, 19, including string-ornamented beakers; food-vessels, 20; cinerary urns, 32, and in addition 9 where the evidence only showed, as in the Outerston

¹ *Proc. Soc. Ant. Scot.*, vol. lxxi, 1936-37, pp. 258-61.

² *Ibid.*, vol. lxxviii, 1933-34, p. 295.

³ *Ibid.*, vol. lxxv, 1930-31, p. 203.

⁴ *Ibid.*, vol. lxxi, 1936-37, pp. 147-50.

⁵ *Yorkshire Archaeological Journal*, 1938, p. 40.

⁶ *Proc. Soc. Ant. Scot.*, vol. lxxi, 1936-37, p. 149.

⁷ *Op. cit.*, p. 74. Neolithic A rolled-over rims must be clearly distinguished from ones made by added strips. But E. E. Evans, *Winter Journal of Archaeology*, vol. 1, 1938, pp. 56-7, speaks of applied rims as normal. He illustrates three, the first being rather unconvincing. Childe, *Journ. Roy. Soc. Ant. Ireland*, vol. lxxv, 1935, p. 324, mentions that sherds from Slieve na Callighe were built up, and illustrates one.

⁸ Grace Crowfoot, *Palestine Exploration Fund Quarterly*, 1932, describes modern primitive pot-making. Pots are begun in the afternoon by shaping a large shallow bowl out of a lump of clay, then stones are placed all round it to prevent it sagging and it is left till next day. The next portion of the rim is applied as a rolled-out sausage, afterwards thinned with the hands, and finally small pieces are added where necessary to even up the rim. After two or three days' drying the base is made round with a knife used as a spokeshave.

The Kikuyu of Kenya have a different sequence, also for making round-bottomed pots. They start, not with the base, but with the lowest ring. When the rim is reached, the pot is turned upside down and left to dry, till the base can be supported. I owe this information to Mr Eliud Mathu, B.A.

Hill example, the addition of the overhanging rim; incense cups, 1; Iron Age, over a score of different sites in the north and 2 in the south.¹

A number of instances illustrate the architectural quality of the building up of parts or wholes. The West Pinkerton beaker (fig. 3, 2) had its base made of a slab of clay modelled up round the edge, causing as usual the centre of the base to be the thickest part and the outer edge to be concave. Then a strip of clay thinned along the bottom and top was pressed down on the inside, forming an oblique joint, sharp at the bottom and sloping up to the outside, where it curves outward and a little down. A second strip finishes the bulge of the vessel and turns out slightly to begin the neck. The first strip of the neck was for obvious constructional reasons applied to the outside. The next piece equally reasonably, considering the outward flare of the neck, returned to the inside, and was smoothed down to cover thinly the inside of the join between the last two strips. The rim was now finished off, not by flattening the top strip, but by adding what may best be described as a half-strip. Much the same method of rim-making is shown by a typical Neolithic B thickened rim from Glenluce (fig. 4, 9).

It is very interesting that practically the same sequence, except probably for an extra strip in the lower half, would seem to have been followed in the case of a worse-made beaker of similar form, also from East Lothian, whose very carelessly executed decoration seems meant for a somewhat similar chevron scheme (fig. 3, 3); the details of building are, however, not so clear. Another fairly complete section is that of a little beaker from Carn Beg, Arran (fig. 3, 1), which also shows a half-strip, and possibly a fractional one as well, added to form the rim. The shoulder-piece does not appear always to have been added on the outside.

The method of building up food-vessels was just the same, simplified by the greater thickness of the body. Of the four examples illustrated, fig. 3, 4 shows the simplest method of forming the shoulder and is nearly complete. Fig. 3, 7 is a shoulderless vessel with a rim formed by a partly modelled half-strip; its joints vary markedly in shape. The other two are thinner, and perhaps for this reason the joints are more oblique: fig. 3, 5 has a rather inexplicable form of rim, while fig. 3, 6 shows a carefully balanced shoulder strip. A vessel from Closeburn, Dumfries, had the shoulder strip applied to the outside. Here it may be noted that in none of the different types of pots examined was there any instance that suggested what should strictly be termed "coiling," that is to say, strips forming a continuous spiral from base to lip. Indeed it is more architectural, and, if you start from a pinched-up basic slab, also simpler, to make separate successive rings.

Turning to cinerary urns, one is surprised to see in how many stages

¹ Dr A. O. Curle has kindly pointed out to me that, later still, Viking hand-made pots were built in stages, see *Proc. Soc. Ant. Scot.*, vol. lxxix, 1934-35, p. 306.

these great vessels were built, but it is not necessary to suppose that after the addition of each strip there was an interval to allow it to harden. The base started just like the beaker (fig. 4, 7), but the rim may become very complex. Dr Mears has already described the simple addition of the overhanging rim. Fig. 4, 3 shows an intricate collared example. An urn of unusual type from Ireland (Bell Collection) (fig. 4, 2) had its upper strips, at least, applied to the outside; but the strange two-piece rim is quite rational, for the potter, as always, wanted to build rather than model. An urn of biconical type has the rim made of a single strip added to the shoulder in a most stable manner (fig. 4, 4). One encrusted urn (fig. 4, 5) has a straightforward grooved shoulder, naturally treated by the potter as two shoulders, each with a joint, while the encrusted decoration consisting partly of oblique shoulder-stops has been added last. Applied decoration, one would think, should come so naturally to people who made their pots by applying one strip to another that it is surprising that it is not commoner. It would be interesting to see how often the cordons of cordoned urns are applied. Fig. 4, 6 shows a variation of the shoulder. An urn from Tillicoultry had all its building strips applied to the outside. Dr Mears' urn approximates to simple "false-rim" joints morticing in the middle of the wall, like the much earlier coarse Skara Brae ware, of which fig. 4, 1 is an example from Rinyo, where the otherwise more normal outside morticing is also occasionally to be found.

A broken incense cup shows that its lower part is of one piece, presumably completed by just another stage, of which part remains (fig. 4, 8).

Coming finally to the Iron Age, Mr Calder's coarse sherds from Eday have central morticing. A large vessel from Jarlshof (transitional) with its stages added to the inside (*i.e.* outside morticing) is interesting as showing how each stage might be made of several pieces joined obliquely (fig. 4, 15). These joins can be more easily pressed tight than the horizontal ones, and, though occurring at least once in each stage, are visible only in this one example. The base illustrated is possibly not of the same vessel. A sherd from Wiltrow has very close-set rings (fig. 4, 14).¹ But a large number of the examples from earthhouses and brochs differ from those that we have so far considered in that the joints are only exceptionally visible in the section, while the potters did not smooth off the inside of the vessels. From Galson there is an exaggerated instance of the resulting step-like projections or folds (fig. 4, 12), of which a Romanizing rim from Covesea (with central morticing, however) (fig. 4, 10) and a base from Bae Mhic Comain (fig. 4, 13) are more normal. The base is unusual in having an addition to the outside to conceal the concavity. Fig. 4, 11 shows a sherd with an estimated rim diameter of $7\frac{1}{2}$ inches which has very narrow rings and is smoothed off neither inside nor out.

¹ Cf. *Proc. Soc. Ant. Scot.*, vol. lxx, 1935-36, p. 167, fig. 14, 1, 5.

At the moment the chief interest of the potter's stages is that always associated with peeping below the surface and studying the anatomy of things. The exterior is seen to reflect the skeleton, and the skeleton to be skilfully, indeed ingeniously, adjusted to quick and controlled building. Even from this point of view it may be hoped that plain black sections of pots will give way more frequently to ones showing the structure. But the problems raised by central, inside, and outside morticing, joins unsmoothed on the inside, Neolithic A jointless pots, or the finer details of the two beakers first considered, suggest that new points of comparison may in time be provided for the classifier.

I am indebted to Mr W. J. Macaulay for re-drawing the pottery.

The following are the Museum references of the illustrations:—

Fig. 3. 1, EO 309, Carn Beag, Arran; 2, EG 75, West Pinkerton, Dunbar; 3, EG 50, Seton, East Lothian; 4, EE 88, no provenance; 5, EQ 86, Fyvie, Aberdeenshire; 6, EE 123, Altyre, Morayshire; 7, EE 124, Kelso, Roxburghshire.

Fig. 4. 1, HDA 2, Rinyo, Rousay; 2, EB 7, Ireland; 3, EA 84, no provenance; 4, EA 67, Largo, Fife; 5, EQ 216, Mill of Marcus, Angus; 6, EA 75, Auchterless, Aberdeenshire; 7, EQ 298, Drumelzier, Peeblesshire; 8, EO 16, Coullter, Lanarkshire; 9, EE 49, Glenluce, Wigtonshire; 10, HM 199, Coveson, Morayshire; 11, HR 707, Galson, Lewis; 12, GXA 371, Foshigarry, N. Uist; 13, GNB 131, Bac Mhic Connain, N. Uist; 14, HD 532, Willrow, Shetland; 15, —, Jarlshof, Shetland.

SHORT CIST AT WEST PINKERTON, DUNBAR. NOTE ON THE HUMAN SKELETAL REMAINS. By Professor ALEX. LOW, M.A., M.D.

Unfortunately the bones of both skeletons are poorly preserved and are fragmentary.

Skeleton No. 1 is that of an adult male of good muscular development, about middle age, and approximately 5 feet 8 inches in height. The skull is represented by the calvaria, the base and facial skeleton being missing. The sutural lines of the vault are mostly obliterated, the superciliary ridges are prominent, and the outline of the vault, as seen from above, is a broad ovoid and relatively short, the skull being *brachycephalic* with a length-breadth index in the region of 85. The lower jaw is represented by the symphysis with three incisor teeth and a piece of the left angle with the last two molar teeth. Apart from a piece of sacrum there are no vertebrae or ribs belonging to this skeleton, only limb bones, mostly imperfect, being represented. Of upper limb bones there are the lower two-thirds of the shafts of both humeri, the head of a left radius, and small pieces of the shafts of both ulnae. The right femur except for head is intact, and the lower two-thirds of left femur; from length of right femur an approximate stature of 5 feet 8 inches is calculated. Right tibia is fairly complete and is well developed, showing lateral flattening of upper third of shaft—

platygenemia—and a squatting facet on the anterior margin of its lower articular end. The left tibia and the fibulæ are much eroded. Of the bones of the foot the left calcaneus lay beside the skull-cap, while a piece of the right calcaneus lay in the opposite corner of the cist. Curiously, of the bones of the left foot three cuneiforms, cuboid, and the five metatarsals lie together near the lower end of the left femur.

Skeleton No. 2 is much decayed and, apparently undisturbed, lies on its left side in a flexed position; it is that of a middle-aged male. The skull is very imperfect, but so far as can be seen it has characters similar to those of the other skull; the body of a powerful lower jaw has a complete set of teeth with crowns much ground down but showing no trace of disease. Of the skeleton of the trunk there are twelve fragmentary vertebrae and a half-dozen fragmentary ribs. Of upper limb bones—shaft of left clavicle and piece of left scapula; shaft of right humerus and a left humerus, fairly complete, 32 cm. in length, and strongly marked; incomplete shafts of right and left radii and ulnæ; and in relative position all the carpals, metacarpals, and three phalanges of the right hand; of lower limb—middle third of right femur and upper two-thirds of left fragments of right and left tibia and of right fibula; a large left patella and imperfect talus and navicular of left foot.

II.

MISCELLANEA ROMANO-CALEDONICA. II.

BY SIR GEORGE MACDONALD, K.C.B., LL.D., D.LITT.,
LITT.D., F.B.A., H.R.S.A., PRESIDENT.

I. ROMAN COINS FOUND IN SCOTLAND.

Sufficient material has accumulated to justify the publication of a third supplement to my original list of Roman coins found in Scotland. It will be convenient to adhere to the arrangement hitherto followed.¹

(A) ISOLATED FINDS FROM ROMAN SITES.

(a) *South-Eastern Scotland.*

NEWSTEAD.—In February 1934 I was shown a *denarius* of Tiberius (Coh.² i. p. 191, No. 15, with inverted spear instead of sceptre), which had been picked up at Newstead. It had seen much circulation.

INVERESK.—*The Scotsman* of 27th August 1938 reported the discovery of a *denarius* of Hadrian, in good condition, during the extension of the churchyard, which partly overlies the Roman fort. To judge from the description, it may have been one of the group Coh.² ii. p. 136, Nos. 353-56.

(b) *South-Western Scotland.*

BIRRENS.—Twelve coins were recovered during the excavations of 1936 and 1937.² Unfortunately, all of them were in poor condition. Nothing whatever could be made of three *denarii* and three "second brass."³ But Mr Percy Hedley was able to identify two *denarii* of Trajan (Coh.² ii. p. 31, No. 120, and p. 38, No. 190), two "second brass" of the same Emperor with obliterated reverses, and two "second brass" of Pius, both with the type of Britannia seated (Coh.² ii. p. 282, No. 117). Mr Birley further records that he saw in private hands a worn bronze of Domitian and an *antoninianus* of Victorinus, both said to have been found in 1895. As indicated *infra*, p. 272, I am unable to accept the alleged provenance of the latter.

CASTLEDYKES.—Miss Anne Robertson, of the Hunterian Museum, has shown me a "second brass" of Hadrian (Coh.² ii. p. 170, No. 754).

¹ *Proceedings*, vol. lli. (1917-18), pp. 203-76; vol. lvi. (1923-24), pp. 325-29; and vol. lxxviii. (1933-34), pp. 27-40.

² *Proceedings*, vol. lxxli. (1937-38), pp. 339 f.

³ I have seen the coins and have nothing to add to Mr Hedley's excellent report, except perhaps that the size and general appearance of the illegible pieces showed that none of them was necessarily later than the reign of Commodus.

recovered during her excavations on this site in April 1939. A second, much corroded, piece of bronze was probably also a coin of Hadrian.

(c) *The Antonine Wall.*

BEARSDEN.—A *denarius* of Hadrian (Coh.² ii. p. 135, No. 335) was dug up in the garden of Mrs Brownlie, Ardeneraig, Thorn Drive, Bearsden, on or near the line of the Wall and not far from the site of the fort, in May 1938. It was 1½ foot underground.

(d) *Scotland North of the Antonine Wall.*

ARDOCH.—In December 1935 the local schoolmaster showed me at the Museum a "first brass" of Hadrian (Coh.² ii. p. 186, No. 973), found at Ardoch.

FENDOCH.—The description, given in the *New Statistical Account*,¹ of a *denarius* from this site enables it to be identified with virtual certainty as one of the "antononious" issues of Galba (Coh.² i. p. 348, No. 406).

(B) ISOLATED FINDS FROM NATIVE SITES.

EDGERSTON (Jedburgh).—Mrs Oliver kindly sent for my inspection a *denarius* of Trajan (Coh.² ii. p. 46, No. 276), found in 1938 during excavations at "The Camps."

TRAPRAIN LAW.—In June 1939 two additional *denarii* from this site reached the Museum. They had been discovered by Mr Cruden during his investigation of the structure of the rampart. One was too much corroded to admit of certain identification, but it may have been a Hadrian. The other belonged to the Republican period, having been minted by L. Valerius Acisenus c. 45 B.C. (*B.M. Cat.*, i. p. 536, Nos. 4110 ff.). This is the earliest coin yet recorded from Traprain.

(C) ISOLATED FINDS FROM SITES OF INDETERMINATE CHARACTER.

UPPER TEVIOTDALE.—I owe to the late Mr J. M. Corrie a reference to *Trans. Hawick Arch. Soc.*, 1902 (p. 7), where it is stated that many years ago an *aureus* of Domitian, "as fresh and beautiful as the day it came from the Roman Mint," was unearthed in "the encampment on Rigghill, close by the present farmhouse of Caerleurig." The site has not yet been visited by the officers of the Royal Commission, but the O.S. Map marks a small rectangular entrenchment in the position indicated.

RIBERSLAW (Roxburghshire).—In December 1936 Mrs Kelsall presented to the Museum a "first brass" of Vespasian (Coh.² i. p. 399, Nos. 419-21), found on Riberslaw "more than 60 years ago" by Alfred Bald.

¹ *Perthshire*, p. 273. The passage, which was written in 1837, is quoted by Mr Richmond, *supra*, p. 146.

One naturally recalls the Roman-dressed stones observed on and near the summit of the hill by Dr A. O. Curle.¹

COLDINGHAM (Berwickshire).—Dr Douglas Simpson has drawn my attention to a footnote on p. 13 of Carr's *History of Coldingham Priory*, which records that "a small brass coin of Titus Vespasian has been found by Mr James Belaney, surgeon, on the farm of Ayton Law, about fifty yards distant from the site of a Roman encampment, now very much defaced."

(D) ISOLATED FINDS WITH NO RECORDED ASSOCIATIONS.

NEW LUCE.—In September 1936 I was shown a "small brass" of Constantius II. (Coh.² vii. p. 446, No. 44), which had been found in the bed of the River Luce near New Luce.

MAXTON (Roxburghshire).—In April 1936 I had seen another "small brass" of Constantius II. (Coh.² vii. p. 492, No. 335), found on the banks of the Tweed near Maxton by Colonel Danford.

JEDBURGH.—In the autumn of 1934 a billon coin of Alexandria, issued in Year 2 of Maximianus and having Nike on the reverse, was found about 4 feet below the surface by workmen digging a drain in the old Horse-market, Jedburgh.

NORTH BERWICK.—In November 1931 Mr J. S. Richardson kindly showed me a much-worn "first brass" of Pius and a "small brass" of Constantine the Great (Coh.² vii. p. 290, No. 519), both said to have been dug up at North Berwick.

GULLANE.—In 1935 Mr H. J. Younger came upon a "small brass" of Theodosius I. (Coh.² viii. p. 159, No. 41) in excavating a kitchen-midden at Gullane.²

ECCLEFECHAN.—In his Report on Birrens Mr Birley mentions a bronze coin of Maxentius (Coh.² vii. p. 168, No. 27 or 28) "in mint condition," found about 1935 near Ecclefechan.³

IRVINE.—In October 1937 Miss Anne Robertson identified a "middle brass" of Constans I. (Coh.² vii. p. 407, No. 18), which had been dug up in a garden at Irvine.

COATBRIDGE.—In November 1938 Miss Robertson showed me a bronze coin which had been found some weeks previously in Whifflet, a district of Coatbridge, by Mr J. M. Davidson. He had picked it out of the upheast of a trench 3½ feet deep, which was being cut to lay an extra water supply. It proved to be an imitation of a Claudian *as*, one of the group dealt with by Mr C. H. V. Sutherland in No. 65 of the American Numismatic Society's *Notes and Monographs*. The head on the obverse and some of the letters of the inscription could be made out readily enough, but the reverse was

¹ *Proceedings*, vol. xxxix. (1904-5), pp. 225 ff.

² *Proceedings*, vol. lxxii. (1937-38), p. 310.

³ *Proceedings*, vol. lxx. (1935-36), p. 330.

rubbed smooth. So far as I am aware, this is the first imitation Claudius recorded from Scotland, but it is matched by the Antonia from Norrie's Law, which (as I pointed out in my second supplement¹) is also an imitation.

KNIGHTSWOOD (Glasgow).—In April 1935 I had submitted to me a much-worn "second brass" of Hadrian (Coh.² ii. p. 161, No. 642), dug up 6 feet below the surface in this Glasgow suburb.

CARLUKE.—In May 1934 Mr J. Nairn, Braidwood, Carluke, sent to me for identification two coins which he had thrown up when "digging in the orchard." They had both been minted at Alexandria, one in the first regnal year of Diocletian with Hope as a type, the other in his fifth with Ensebeia. An inquiry as to the depth at which they were lying elicited no response. One cannot, therefore, discount the possibility that they were recent importations, thrown aside as valueless.²

STIRLING.—In the early summer of 1939 a workman came upon a "second brass" of Tiberius (Coh.² i. p. 54, No. 228) while demolishing the foundations of premises, now a garage, at the corner of Upper Craigs and Goosecroft Road.

AUCHTERARDER.—I am now able to correct and amplify the reference in *O.S.A.* to the coin "of the Emperor Titus Vespasian" found here before 1792.³ In 1938 Mr John Ritchie disinterred in the archives of the Perth Museum a letter written, on 11th Sept. 1784, by John Gillies, a well-known bookseller and antiquary in the city, to the Rev. James Scott. Its purpose was to enclose "a drawing of a Gold Medal of the *Emperor Vespasian* which was found last week in digging the foundation of the old Church of Auchterarder." The drawing shows that it was not an *aureus* but a "second brass" (Coh.² i. p. 381, No. 181).

SKYE.—When in Skye in 1772, Pennant was presented with "a *Denarius*, of the Emperor *Trajan*, found on a moor near the shore of *Loch-Grisernis*." ⁴ Loch Grisornish is just over 6 miles N.E. of Dnnvegan Castle.

HOARDS OF SILVER.

(b) *South-Western Scotland.*

KIRKINTILLOCH.—In May 1939 I was shown two stragglers from the hoard of *denarii* found here in 1893 ⁵—a Domitian (Coh.² i. p. 474, No. 51) and a Nerva (Coh.² ii. p. 3, No. 25).

(c) *Scotland North of the Antonine Wall.*

FALKIRK.—I have had an opportunity of examining four stragglers from the great hoard found at Falkirk in 1933.⁶ They were *denarii* of Vespasian

¹ *Proceedings*, vol. lxviii. (1933-34), p. 30, footnote.

² Cf. *Proceedings*, vol. lxviii. (1933-34), p. 31.

³ *Proceedings*, vol. lii. (1917-18), p. 246.

⁴ *Tour in Scotland*, 1st ed. (1772), p. 344; 2nd ed. (1776), pt. I., p. 344.

⁵ *Proceedings*, vol. lii. (1917-18), pp. 262 f.

⁶ *Proceedings*, vol. lxviii. (1933-34), pp. 32 ff.

(Coh.² i. p. 384, No. 226), Titus (Coh.² i. p. 443, No. 158), Hadrian (Coh.² ii. p. 187, No. 989), and Commodus (Coh.² iii. p. 295, No. 504).

PORTMOAK (Kinross).—Shortly after the publication of my last supplement a parcel of 26 *denarii*, belonging to a trust estate, were brought to the Museum for identification. A note preserved with them said that they had been found at Kirkness (Kinross) in 1851, in a moss. As Kirkness is in the Parish of Portmoak, there can be no doubt as to their having formed part of the hoard of 600 or 700 disensed in my original list.¹ Here is an inventory of them: M. Antony (Coh.² i. pp. 41 f., Nos. 26 ff.—legionary number illegible), Vitellius (Coh.² i. p. 359, No. 45), Vespasian (Coh.² i. p. 396, No. 373), Titus (Coh.² i. p. 442, No. 153), Domitian (Coh.² i. p. 504, No. 397), Nerva (Coh.² ii. p. 7, No. 59), Trajan (Coh.² ii. p. 27, No. 87; p. 57, No. 372; and p. 77, No. 575), Hadrian (Coh.² ii. p. 198, No. 1108, and p. 224, No. 1425), Pius (Coh.² ii. p. 287, Nos. 155 and 156; p. 288, No. 164; p. 304, No. 344; and p. 332, No. 631), Faustina Senior (Coh.² ii. p. 414, Nos. 1 (two specimens) and 11; p. 421, No. 108; and p. 425, No. 159), M. Aurelius (Coh.² iii. p. 12, No. 102; p. 56, No. 543; and p. 63, No. 628), Lucilla (Coh.² iii. p. 215, No. 7), and Commodus (Coh.² iii. p. 269, No. 311).

BRIGLANDS (Kinross-shire).—In the early summer of 1938 Lord Clyde asked me to identify for him three *denarii*, which had been found at the mouth of a rabbit-burrow on his property of Briglands. The exact spot was on the bank of the Devon, about half a mile from Rumbling Bridge. They proved to be of Otho (Coh.² i. p. 353, No. 17), Vespasian (Coh.² i. p. 395, No. 366), and Pius (Coh.² ii. p. 292, No. 197). In returning them I suggested that they were probably "strays" from a hoard, and that a systematic search might be worth while. The whole area was accordingly carefully cleared, with the result that six others were recovered. They were of Julia Titi (Coh.² i. p. 466, No. 14), Trajan (Coh.² ii. p. 29, No. 156, and p. 44, No. 248), Hadrian (Coh.² ii. p. 198, No. 1102), Pius (Coh.² ii. p. 299, No. 284), and Commodus (Coh.² iii. p. 342, No. 879). Although the coin of Commodus was struck in A.D. 183, considerations of locality suggest that this little hoard was not buried until the early years of the third century.² In other words, the likelihood is that it belonged to the same "late" class as the very much larger hoard from Kirkness, and that it had been concealed under stress of the same set of circumstances.

2. A NEW INSCRIPTION FROM MUMRILLS.

I take this opportunity of putting on record the text, so far as it has been preserved, of the inscription on the portion of an altar discovered by Mr Samuel Smith at Mumrills in the early winter of 1937–38,³ and kindly presented to the National Museum by Mr Forbes of Callendar.

¹ *Proceedings*, vol. iii. (1917–18), pp. 264 f.

² *Proceedings*, vol. iii. (1917–18), p. 275.

³ See Mr Smith's "Note."

It is part of a dedication to the Mother Goddesses by a certain Cassius, the *signifer* or standard-bearer of a regiment that had once garrisoned the fort. Unfortunately, the area of the die is too restricted to have admitted any mention of the unit to which he was attached. The fragment has a maximum height of some $14\frac{1}{2}$ inches and a maximum breadth of 10 inches. As it probably represents three-quarters of the original, the altar has been a small one. This, combined with the rudeness of the workmanship (Pl. LXXX), indicates that the oblation was anything but costly. The letters, which have an average height of about 2 inches, read:

CASSIVS
SIGN
MATRIBVS

On the assumption that there were five lines in all—it does not look as if there could have been more—the fifth was doubtless **VSLLM**, the stock formula, while the fourth would be occupied by one of the numerous epithets that are found attached to the noun in similar dedications. It has been suggested¹ that the missing word may be *Campestr(ibus)*, as the *Campestres* are often conjoined with the *Matres* and are twice mentioned, though without the *Matres*, on inscriptions from the Antonine Wall.² Equally, however, it may have been one of those presumably local designations which are so common on the Continent and an example of which (*Alatervis*) occurred on a lost altar from Cramond.³ It would be idle to guess further, for there are nearly 130 such designations to choose from.

To the short account of the Mother Goddesses appended to my description⁴ of the relief from Colinton, now removed to Fort Augustus, I take this opportunity of adding references to Pauly-Wissowa, *Realencyclopädie*, vol. xiv. (1930) pp. 2213 ff.—where, however, the Colinton relief has escaped the writer's notice—and to *Festschrift für August Oxe* (1938), pp. 164 ff.

3. GENERAL MELVILLE'S PAPERS.

The story of General Melville's discovery of the great camps in Strathmore has already been told in the *Proceedings*.⁵ In 1917 Mr E. W. M. Balfour Melville, a collateral descendant, published a biographical sketch of the General, written by John Dougall, his secretary, appending to it a series of useful footnotes.⁶ Some years later he placed in my hands a small package of the General's papers, dealing mainly with Roman

¹ *Journ. of Roman Studies*, vol. xxviii, p. 204.

² *Roman Wall in Scotland* (2nd ed.), pp. 428 and 433. Cf. *A Roman Frontier Post*, p. 149.

³ *C.I.L.*, vol. vii. No. 1084.

⁴ *Proceedings*, vol. lii. (1917-18), pp. 38 ff.

⁵ Vol. xxviii. (1893-94), pp. 48 ff. Cf. *Archæologia*, vol. lxxviii, pp. 169 ff.

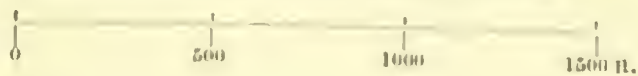
⁶ *Scottish Hist. Review*, vol. xlv, pp. 116 ff.



Altar found at Mumrills, 1937.



Plan of Raedykes, from Roy's Military Antiquities.



Scotland. My first impression was that two or three of them might be worth reproducing *in extenso*. A more leisurely examination, which has unfortunately had to be postponed until now, has brought a change of mind. A single, comparatively short one will be printed below. For the rest a very general description should suffice.

The most voluminous of the documents is the unfinished draft of a letter which Dougall intended to address to Mr Robert Whyte Melville, son of Mr John Whyte or Whyte Melville of Bennochy, the General's cousin and heir. The draft, which, though unfinished, covers no fewer than 25 closely written folio pages, is dated 12th July 1813. It shows that, soon after Melville's death in 1809, his successor had arranged that Dougall should prepare for publication in a sumptuous volume the numerous essays on military history and tactics which had been included in the legacy. A "List of M.S.S. &c. Lent Mr Dougall from General Melville's Library" bears date 15th June 1810, and throws an instructive light on the variety of topics that the proposed book would have touched upon. From the draft letter we can gather that Mr John Whyte Melville had himself died in the interval, and that his son was growing more and more impatient at what he regarded as Dougall's procrastination. Although the General had been dead for more than four years, and although the editor had from time to time been receiving instalments of the stipulated honorarium, the progress made seems to have been virtually negligible. There is nothing to indicate why the letter was never completed. We know only that the whole enterprise collapsed.

Dougall's defence of himself does not concern us here. It is more to the purpose to mention that a specimen of the contents of the projected volume has survived. It extends to 61 quarto pages of manuscript, and has on the outside the title, "Agricola's Camps in Scotland, by General Melville." The heading inside is "Appendix No. . . See Memoirs, &c., page . . ." When carefully scrutinised, it proves to be little more than a rehash by Dougall of Melville's contribution to Gough's edition of Camden's *Britannia*,¹ the only fresh fact being a record of a *denarius* of Pertinax found in Fife.² In this connection considerable sentimental interest attaches to a much-worn half-sheet of notepaper endorsed, apparently in the General's own handwriting, "1754 Sketches of the Roman Camps near Brechin and near Forfar in Angus." On one side is a rough sketch-plan, with dimensions, of the camp at Battledykes, and another of a small oval fort " $\frac{1}{2}$ Mile West of Cloghton." On the other are similar sketch-plans of the temporary camp at Keithock and of the two Caterthuns.

It will be remembered that it was in the summer of 1754 that Melville made his memorable discoveries. It is, therefore, permissible to believe

¹ Vol. III, pp. 414 * ff. in the ed. of 1789, and vol. IV, pp. 158 ff. in the ed. of 1806.

² *Proceedings*, vol. III. (1917-18), p. 238.

that these may be the jottings which he set down, if not actually upon the ground, at all events as soon as he had pen and ink within reach. The same may be true of three other half-sheets, with similar sketch-plans, endorsed respectively "1754 June Roman Station at Innerpeffry," "1754 Sketches of Entrenchments near Aberbrothick in Angus," and "July 1754 Remains of an Entrenchment on Downhead hill near Arbirlot in Angus." All these places would be included in Melville's itinerary of 1754, when he "made a walking tour through a great part of the country by the West Highlands to Fort William, across to the eastern shore at Fort George, and then southward to Montrose, from which through Angus westward into Perthshire, and thence returned to Edinburgh."¹ "Innerpeffry" is, of course, what is now usually called Stragath. The remaining two, like the Caterthuns and the fort near "Cloghton," are of native origin. There is no reason to believe that Melville thought otherwise. They have, therefore, nothing to do with Roman Caledonia, although the sketches may merit the attention of the Ancient Monuments Commission by and by, seeing that they represent the fortifications as they were nearly two centuries ago.

From the handwriting it seems evident that the descriptive notes on the back are not contemporary, but were added much later, and the conclusion is confirmed by a fifth half-sheet, endorsed "1754 Remains of Roman Camps near Ardoch," which has on the inner side a plan of the fort and the two temporary camps at Ardoch, very much as they appear on pl. xxx. of Roy's *Military Antiquities*. This cannot possibly be original, because Melville himself tells us² that it was Roy who discovered the temporary camps at Ardoch and that the discovery was not made until 1755. He must have had an opportunity of copying Roy's drawing long before it was published, for he was practically blind by the time the *Military Antiquities* appeared. That he should have had such an opportunity is in no way surprising, for the two were on friendly terms for many years and were both resident in London. Proof that they kept in touch with one another is furnished *inter alia* by a scrap of paper, obviously given or sent to Melville when he was contemplating a tour. He has endorsed it "1778 June. Note from Col. Roy concerning antiquities in the North of Scotland." There is a further endorsement by Dongall—"1778 Memorandum from Col. Roy for Travelling North." Inside are two lines in Roy's handwriting, "Barra Hill near old Meldrum"³ and "Hills near Forres seem to have Entrenchments." Then follow jottings by Melville himself of one or two other places which he evidently thought of visiting. These include Burghead.

¹ Gough's *Camden*, *loc. cit.* The Strathmore camps were discovered later in the summer, in the course of a journey undertaken specially to look for them, as the result of a careful reading of the *Agricola*.

² *Ibid.*

³ See *Proceedings*, vol. lxxl. (1936-37), p. 377.

Apparently the plan of a tour was never carried out. But from a booklet of 16 double sheets, octavo size and stitched in a cover, we learn that a journey of the kind had been made in the year preceding. The contents are entirely in Melville's own hand. Of the 32 available pages 6 are blank and 22 are occupied by "Cursory Heads of a short Trip made by Lt Genl Melvill & John Whyte Esq^{re} of Bennochly into the Shires of Angus, Kincardine & Aberdeen begun on the 19th & ended on the 30th of September 1777." The cousins went north by Brechin and Stonehaven and thence up Deeside and Braemar, returning by the Spittal of Glenshee. The "Heads," which are in diary form, are very slight, being little more than lists of the houses where they stayed and the people whom they met. They spent two nights with Lord Mounboddie, who had entertained Johnson and Boswell four years previously and whose theories about primitive man drew from Johnson the sarcastic comment that he was "as jealous of his tail as a squirrel." Their host joined them in an excursion which they made with Mr Barclay of Ury to the camp at Raedykes, about the Romanity of which Melville had no manner of doubt.¹ He also accepted a Roman origin for a rectangular fort near Fordoun,² referring to it as follows: "There are very distinct remains of a Roman Castellum at present planted with firs abt 300 yds east from the House of Fordoun—we paced it and it was about 80 in length & forty in breadth." I do not know whether this entrenchment has ever been looked at with critical eyes since, but, in view of Melville's opinion, it deserves more than a passing glance.

The remaining 4 pages of the booklet contain disjointed notices of the routes followed in journeying to and from Scotland in the years between 1776 and 1781, both inclusive. From these it may be gathered that the writer came at least as far as Edinburgh annually. He was also in correspondence with various people interested in Scottish antiquities, among others with Lord Buchan, the founder of our Society. The only actual remnants of this in Mr Balfour Melville's packet are, however, an original letter from John Gillies, the Perth bookseller and antiquary,³ dated 7th July 1785, and five copies of letters from Melville himself, two of them addressed to Gillies in 1785 and three addressed to Captain Shand, the discoverer of Glenmailen,⁴ two in 1788 and one in 1789. None of these is of any importance except the letter to Shand of 12th May 1788, long ago printed (from the original) in the *Proceedings*.⁵ Save for the two documents to be dealt with under the next heading, the catalogue of papers is now almost complete, the only others being (a) a translation of a few sentences from

¹ It seems, therefore, that the uncompromising opinion he expressed in Gough's *Camden* referred only (as I suggested in *Proceedings*, vol. i. (1915-16), p. 319) to the connection of the camp with the battle of Mons Graupius.

² Chalmers, *Caledonia*, vol. i. p. 177, footnote (d).

³ See *Proceedings*, vol. lxxi. (1936-37), pp. 373 ff.

⁴ See *supra*, p. 214.

⁵ Vol. vii. (1866-68), pp. 29 ff.

the *Agricola* made on 22nd March 1778; (b) what appears to be the beginning of a list of phrases from Livy in which words like *acies*, *agmen*, *pugna*, *legio*, and so on occur; and (c) a set of notes, dated 14th October 1773, and endorsed "Sketches from Armstrong's Map of Northumberland relative to Fields of Battle"—all three eloquent of that devotion to the study of military history which was the consuming passion of Melville's life.

4. THE ROMAN CAMP AT RAEDYKES.

In describing the excavation of this camp more than twenty years ago, I endeavoured to clear up the confusion in which the different plans



Fig. 1. Plan of Raedykes, made in 1778.

Danes were pursued to their ships with great slaughter. There have often been discovered among the sand of the seashore, human bones of an uncommon size. There is a secure Bay & commodious Harbour at Stonehaven.

Some are of opinion that this was Agricola's Camp, from which he attacked Galgaens. *Vid.* Tacitus de vita Agricole.

published in the latter half of the eighteenth century were involved.¹ Two documents in Mr Balfour Melville's packet throw fresh light upon the matter. If the first of them adds a further element of mystery, the second finally settles what was, after all, the most important point at issue—the source of Roy's information.

The earlier, unfortunately anonymous, is entitled "Plan of a Camp called Rê-dykes, on the Grampian Hills near Stonehaven, sarvey'd, August, 1778." It is reproduced in fig. 1, letters referring to a series of descriptive notes at the sides being omitted, as the notes are hardly relevant to our purpose. Beneath are the sentences:

The universal tradition of the country is, that this was the Camp of the Scots, previous to an engagement with the Danes, which certainly happened near this place. The Battle is said to have been fought hard by Stonehaven & the

¹ *Proceedings*, vol. I. (1915-16), pp. 319 ff.

On the back is endorsed, in Dougall's handwriting:

This plan & description was sent by Robert Barclay of Urie, Esq^r, proprietor of the land, to General (then Lt Gen^l) Melvill, who had, with him, Lord Moudboddie, and John Whyte of Bennochy Esq^r, in summer 1777 visited this Camp—and G^l Melvill gave a copy of it to his friend Major General Roy in whose splendid posthumous work it appears.

That no reliance can be placed on the accuracy of the endorsement will be apparent from a glance at Plate LXXXI, which is certainly not a reproduction of fig. 1. At the same time the latter is quite unlike any of the other plans illustrated in my original article. The date and the fact that it was in Melville's possession suggest that it may be that of Professor Stuart, since we know that his survey was made in 1778 and that his plan was sent to the General.¹ On the other hand, fig. 1 differs more widely from the plan in the *Bibliotheca Topographica Britannica*, against which Stuart has no complaint to make, than it does from that in Roy's *Military Antiquities*, which he criticised adversely.² Moreover, the sentences quoted above indicate that the draughtsman believed Raedykes to belong to the days of the Scandinavian raiders, whereas Stuart considered it to have been the camp of Galgacus. The puzzle, I fear, must remain unsolved. Luckily the answer is of little importance.

The second document, however, is of considerably more interest. It is a double quarto sheet, the first two pages of which are covered with a note in Roy's bold handwriting. It is headed "Memoranda to Gen^l. Melville concerning the Position of the camp of Rae-Dykes near Ury," and it reads:

The Sketch on transparent paper, which accompanys these Remarks shews the general & relative situations of some places near Stouehaven & Ury, as taken from the Map of Scotland.

From the plan and Mr Barclay's [*sic*] description it seems to me that the Camp is situated on the rising ground between the Farms called *Springhill* and *Easterloun*.

Query? Is the meridian, drawn on the plan of the camp, that of the Magnet, taken with a Theodelet or other such Instrument, or is it the true meridian found by any other means?

Into what Burn or Brook doth the little Rill run which rises within the camp?

In order to fix the position of the camp on our Map, if a Theodelet is placed on the top of the Garneyhill, and Bearings are taken from thence, to the principal places in the Neighbourhood, marked on the sketch, viz^l. Stouehaven, Kirk of Fettesee, Murgy House, Cowie Ness &c., the camp may be inserted into the Map, with sufficient accuracy.

Would Mr Barclay be so good as order these Bearings to be taken, and transmit them; or order the camp to be drawn in its proper situation on the sketch, & return it?

It is to be observed that the camp is not so large as that at Battle-Dykes

¹ *Op. cit.*, p. 325.

² *Ibid.*

near Forfar; nor even so great as the large one at Ardoch in Strathallan. It is undoubtedly one of Agricola's; probably one that he occupied after the Battle with Gathelus, and after he had made the Detachments which were sent on board the Fleet to sail round Britain.

If this conjecture be founded, the Field of Battle should still be sought for between Kieithwick & Ury, somewhere about Fettercairn or Montboddie.

On the third page is a postscript in Melville's hand:

N.B. The sketch on transparent paper is taken from the G¹ Map or survey plan of Scotland made from an actual survey by order of Government which was never published, but is just now in Col. Roy's possession, it is executed upon a scale of a 1000 yards to an inch.

The first of these passages confirms my surmise that Roy had never seen Raedykes, and that his plan is the result of a survey carried out early in 1785 under Mr Barclay's directions,¹ Melville being the intermediary, for there can be no doubt as to its being Plate LXXXI, which is the subject of the "Memoranda." That is made certain not only by the conspicuous position of the meridian, but still more by the presence of "the little Rill . . . which rises within the camp," a feature that appears in none of the other plans. In his will Roy put the manuscript map, of which Melville speaks, at the disposal of "a most gracious sovereign."² It passed into the King's Library and is now housed in the British Museum, where it is known as the Duke of Cumberland's Map. As I was a little puzzled by the spelling of the place-names in Roy's note, as printed above, I invoked the help of Mr John Allan, the Keeper of Coins, who kindly examined the original sheet from which the tracing was made. He tells me that there Fetteresso appears as Foteressy," that there is no "Margy House" or "Cowie Ness" but only "Margy" and "Cowie," and that the former from its position must be the modern Mergie.

5. DEALGINROSS.

In the first set of these *Miscellanea*³ I reproduced from the archives of the Perth Literary and Antiquarian Society a paper which had been read to the members in 1788 by Captain Alexander Shand. By the courtesy of Mr John Ritchie I am now able to print a "Plan and Description of the Roman Camp at Dalginross, from a Young Gentleman Residing in its Neighbourhood." There is no name attached, but the date is 1786. Fig. 2 shows the plan as Mr Calder has redrawn it from a tracing by Mr Ritchie. The relevant portion of the accompanying "Observations" runs as follows:—

Whether this be the Camp possessed by Gathelus and recorded by Tacitus, I know not, however it seems very ancient, for at the mark +,

¹ *Op. cit.*, pp. 330 f.

² *Archæologia*, vol. lxxviii, pp. 208 f.

³ *Proceedings*, vol. lxxi. (1936-37), pp. 373 ff.

the water has carried away a corner of the camp, and at this present time it is 8 or 10 acres distant to the westward.

In the North Camp the better sort had staid, where there is a trench within a trench, the innermost of which is very much defaced. At the same mark, +, there is a tradition that the water was made to run eastward through the camp by a kind of subterraneous passage, but I imagine this

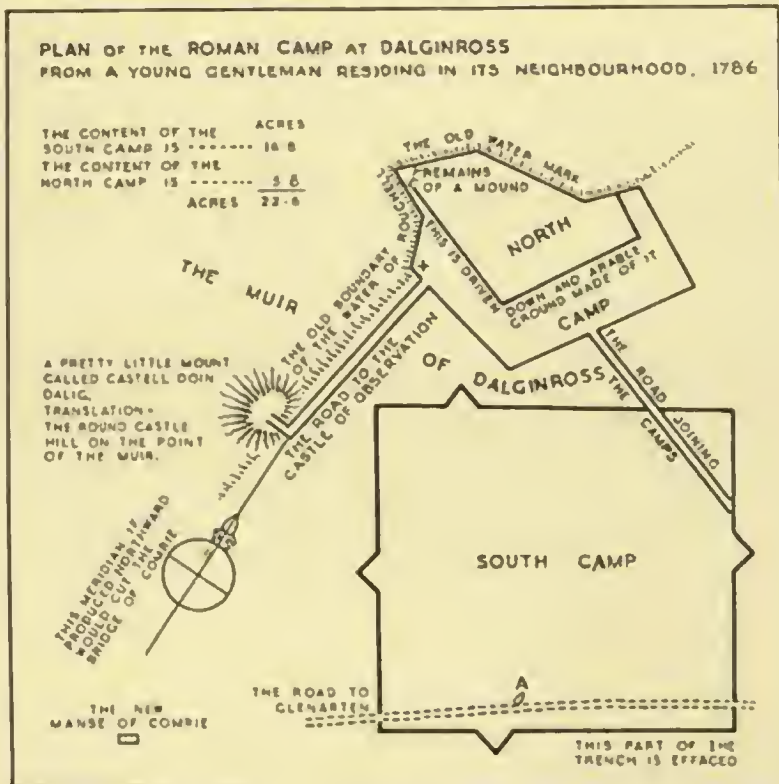


Fig. 2.

to be a fable, however the South Camp was supplied with water by a small nequeduct from Rouchell water which came east some where about the New Munse, and entered the Camp at the S. west corner.

These old roads which appear on the plan, are still very neat and perfectly regular, being caused on each side by a double row of stones to keep up the gravel.

A gold medal was found here, with the impression of Titus Vespasian on one side thereof, together with a Hammer and a Spear. At A there is a large hard stone 20-61 Square foot for a base and 8 feet high, and if I calculate right, it weighs 437 stones.

In view of recent discoveries at Fendoch and at Birrens, the references to nequeducts are interesting. The first of them may be less of a "fable" than the writer supposes; the "tradition" may well be founded on the

exposure of an underground channel. It is, however, the plan that deserves most attention. Except that the *clavicula* at the gates of the South Camp have been misunderstood, it corresponds wonderfully closely to Roy's plan, which was executed in 1755¹ but not published until 1792. Until it was made, therefore, antiquaries had nothing more reliable to guide them than the very unsatisfactory plate in the *Itinerarium Septentrionale* of Gordon,² whose main concern with the site was to prove that it had been the scene of the battle with Galgacus. The "Young Gentleman" evidently regarded what he calls "Castell Doin Dalig," or "the round Castle Hill on the point of the Muir," as an integral part of the Roman defences, since it is plainly "the Castle of Observation" to which the road from the west gate of the smaller camp leads. In a later and less adequate plan, prepared in 1802 by "George M'Farlane, Land Surveyor, Comrie," which Mr Ritchie has been good enough to send for my inspection, it is designated "Toun Chastell or Castle Knoll." If it is artificial—it still exists—it may be a prehistoric cairn, for a "Court Knoll," which appears on M'Farlane's plan about 140 yards E. of the N.E. corner of the South Camp, was opened some time before 1807 and found to contain a cist, in which was an urn with cremated remains.³

6. BIRRENS RECONSIDERED.

Almost forty-five years have elapsed since the Society brought its excavations at Birrens to a close. In the interval experience elsewhere has taught us all a great deal. Nevertheless, the plan then recovered still retains much of its original value. I doubt whether the younger generation, standing as they do on the shoulders of their predecessors, are in a position to realise what a remarkable achievement it was. Although Mr Barbour, the architect in charge, had no preconceived ideas as to what he was likely to find, and although from first to last he had no comparable plan to guide him, yet his professional skill and his power of acute observation, backed as they were by exceptional care and conscientiousness, enabled him to map out the internal arrangement of a typical Roman *castrum* with a completeness that had no parallel in this country in its day. It would, however, be unreasonable to suppose that, in the circumstances, he could have exhausted all the possibilities of exploration. Accordingly those of us who have followed the steady development of the technique of "digging" were very glad to learn that the Dumfries Society, under the energetic direction of Mr R. C. Reid, were proposing to reopen Birrens in the hope that an application of the newer methods might yield further information.

¹ *Archæologia*, vol. lxxviii, pp. 171 f.

² In my copy it faces p. 40. Horsley's plan, though later, is for some inexplicable reason worse.

³ This is stated in two other papers on Dealginross, likewise in the Perth Museum.

Substantial monetary assistance was voted by the Council of our own Society, and a Report on the operations of 1936 and 1937 has just been published in the *Proceedings*.¹ As illness prevented my attendance at the meeting at which it was presented, I must crave the indulgence of the Society to offer a few belated observations on it now, my excuse being that no small part of it is devoted, not to an objective account of what the spade revealed, but to an elaborate attempt to rewrite the history of Roman Scotland on somewhat novel lines. Mr Birley, who was in immediate charge of the work and has therefore acted as editor, is, of course, fully entitled to form his own opinions on the wider subject and to do his utmost to get others to accept them. At the same time the address to which his challenge is directed is so plainly legible that I could not remain silent except at the risk of serious misunderstanding. Nor can I help regretting that he should have approached his very difficult task in what can only be described as a controversial mood. He makes no secret of the fact that it was his dissatisfaction with the current interpretation of the 1895 evidence from Birrens which led him "to initiate the excavations there in order to prove [his] point" (p. 278). When people dig up Roman or other remains in order to prove points rather than in order to ascertain facts, experience shows that archaeology is seldom the guinea.

Put briefly, his "point" was that the fort had been an integral part of the Hadrianic frontier system, and that, broadly speaking, its history must have been the same as the history of Bewcastle and Netherby on the west, and of Risingham and High Rochester on the east. It hardly needed his sketch-map to demonstrate that such a theory is *prima facie* reasonable enough. As a matter of fact, it is nearly thirty years since I myself wrote that "geographically, [Birrens] belongs as much to Hadrian's Wall as to Scotland,"² and some ten years later I actually suggested that the fort might have started life as an outlier of that formidable barrier.³ Nor can I claim to have been a pioneer, for the idea was mooted at least as long ago as 1840.⁴ So far, then, as the possibilities of the beginning are concerned, Mr Birley and I are in agreement. But we part company as to the ultimate end. Whereas I believe that the fort was probably abandoned not later than A.D. 200, Mr Birley insists that it was occupied throughout practically the whole of the third century as well as during a considerable portion of the fourth. In this he might perhaps have appealed to the powerful support of Horsley.⁵ But Horsley knew nothing of the evidence of 1895, and the evidence of 1895 is vital.

¹ Vol. lxxii. (1937-38) pp. 275 ff. In order to save undue multiplication of footnotes, references in this Report are inserted, within round brackets, in their appropriate places in text or notes, as the case may be.

² *Roman Wall in Scotland* (1st ed.), p. 399.

³ *Dumfries, Soc. Trans.*, 3rd ser., vol. viii. p. 78.

⁴ By Hodgson, who was, however, misled by wrong information as to the provenance of an inscription (*Hist. of Northumberland*, pt. II, vol. III, p. 251). Cf. also *Birrens and its Antiquities* (1897), pp. 68 f.).

⁵ *Britannia Romana*, pp. 67 and 115.

In 1911 I drew attention to the significance of the circumstances in which the fragments of the well-known dated inscription, bearing the name of Julius Verus, had been found by Mr Barbour.¹ Some of them were in the well of the Headquarters Building, and others were scattered about the surrounding courtyard. With the story of Bar Hill before my eyes, the inference seemed to me irresistible: the Building had never been restored after the demolition in the course of which the inscribed slab was torn from its place and smashed in pieces. In other words, the fort of A.D. 158, whenever it may have been destroyed, represented the last effort of the Romans to maintain their hold upon the position. Mr Birley dissents, and he bases his dissent upon two propositions, to neither of which can I believe that he would have committed himself had he looked more carefully at the remains of the slab about which he was going to write.

The first is that "if the inscription had still been in position when the fort was abandoned, its fragments should have been found fallen upon the street to the south of the *principia*, for its original position must have been in front of that building, where it could be seen by people approaching from the *porta praetoria*" (p. 282). There is not the faintest shadow of justification for the categorical "must." The statement is a pure assumption, utterly inconsistent with the appearance of the fragments themselves. Not only does the lettering stand out almost as clearly as if it had been cut yesterday, but one can still see quite distinctly—what can seldom be seen in inscriptions—the thin, light lines, never meant to be permanently visible, which have been ruled horizontally across the stone to enable the workman to keep the individual letters of uniform size. According to Mr Birley (p. 347), the slab must have stood on the outside of the wall, facing the street, from A.D. 158 to A.D. 196. If it had done so, it is incredible that, after exposure to the rains and frosts and winds of nearly forty Scottish winters, the sandstone should have retained its original surface virtually intact.

Still harder to reconcile with the archaeological data is the second of the two propositions, which runs thus: "It can only be concluded that the inscription had been re-used, as was often the case, as a flag or flags in the paved courtyard" (p. 282). Although "often" is rather an overstatement, it is unquestionably true that building-inscriptions sometimes came to such base uses. But it is quite impossible that anything of the kind can have happened in this particular instance. To serve such a purpose the slab must have been placed either face upwards or face downwards. After what has been said in the preceding paragraph, there is no need to waste words in insisting that the face cannot have been "trodden under foot of man" for close upon a hundred and forty years, as Mr Birley's hypothesis requires, his dates being from A.D. 205 to A.D. 340 (p. 347). And,

¹ *Roman Wall in Scotland* (1st ed.), p. 399.

even had the stone been laid face downwards, the lettering would have been to some extent blurred through friction against the underlying soil, as witness, for example, the inscription from the floor of Jedburgh Abbey,¹ and the later of the two from the barracks at Birdoswald.² Moreover, that it was not laid face downwards is conclusively shown by the condition of what would then have been the upper side. This is lumpy and rough-hewn, sufficiently "scabbled" to be suitable for building into a wall but not bearing the slightest trace of any endeavour to make it approximately level, not to say smooth, for walking upon. And what about the altar from the Sacellum, dedicated by the same unit and obviously contemporary, which was also found in the well and whose fortunes were evidently linked to those of the building-inscription? Are we seriously asked to believe that it too, measuring as it does 3 feet 4 inches by 1 foot 11 inches by 1 foot 7 inches, had been "re-used as a flag or flags in the paved courtyard"? If not, where had it been lurking for the century and a half between A.D. 196 and A.D. 340?

Speaking of the building-inscription, Mr Birley tells us that "analogies are not far to seek" (p. 282). He is right. Unfortunately, there is nothing very definite to be said about the first of the two which he brings forward, the broken slab from Rough Castle—except, indeed, that the position in which it was found suggests that its original place was inside rather than outside of the Headquarters Building, and that its appearance precludes the idea of its ever having been used as a paving-stone.³ The analogy from Bar Hill, on the other hand, is probably a good deal closer than Mr Birley quite realised. In the first place, both inscriptions were found in the well of the courtyard, and each had for company the altar from the Sacellum. Although the well at Birrens produced nothing comparable to the 64 linear feet of columns from the well at Bar Hill, it is quite certain that in both cases the contents represented debris from the *principia*, thrown down by the wreckers when the fort was abandoned. In the second place, a fresh examination of the inscribed fragments from Bar Hill proves that the paving-stone theory would have as little to say for itself there as it had at Birrens; the lettering on the face is sharp and clear, the surface of the back is rough-hewn and lumpy. At both forts, therefore, the building-inscription was still *in situ* when the end came.⁴

¹ *Proceedings*, vol. lvii. (1922-23), pp. 173 ff.

² *Trans. Cumberland and Westmorland Soc.*, N.S. vol. xxx. pl. x.

³ I can see no evidence for the positive assertion (p. 283) that it was the actual slab set up at the time of the erection of the fort during the governorship of Lollius Urbicus. We simply do not know.

⁴ I say "the end" advisedly. It has been suggested to me that at Birrens the aqueduct, discovered by Mr Richmond in 1937, offers another way out: the construction of this may have rendered it possible to rebuild and restore the *principia* without clearing the well at all. But to leave the well in the condition in which it was found by the excavators in 1895 would have been an unheard-of piece of slovenliness, besides involving the neglect of an invaluable reserve of water. And, apart altogether from such considerations, the suggestion is ruled out by the fact that some of the fragments were scattered about the floor.

The parallel between Birrens and Bar Hill can, however, be carried further. According to Mr Birley (p. 283), "there can be no doubt" that the building-inscription from the latter should be dated to the governorship of Lollius Urbicus. When I first published it,¹ I might have been disposed to agree. Now that we know so much more about the Antonine Wall than we did then, I differ very decidedly. I believe that the Bar Hill slab and altar may safely be ascribed to the same period as the slab and altar from Birrens—that is, to round about A.D. 158 after Julius Verus had suppressed the rising which led to the temporary abandonment, not only of the Dumfriesshire *castellum*, but also of the whole series of *castella* along the line of the Wall. It is certain that the Second Cohort of Tungrians rebuilt Birrens then, while a couple of altars survive to show that the First Cohort of Germans, called Nervana, was the regiment that had preceded it there.² It is no less certain that it was the First Cohort of Baetasians whose memorials stood in the Headquarters Building at Bar Hill when the fort was evacuated for the last time, and these were presumably set up when that Cohort took the place of the First Cohort of Hamians, the names of two of whose commanders occur on inscriptions found on the site. It is natural to suppose that at both places the change of garrison, thus epigraphically attested, was part of a reshuffle such as might very well follow the crushing of the rebellion. It may be objected that the Bar Hill slab was dedicated to Pius, and that there is reason to believe that the whole of the forts on the Antonine Wall had to be rebuilt some time after his death in 161. Bar Hill, however, is not one of those that have yielded proof of three periods. Moreover, unless there had been a further change of garrison—and for such a change there is not a scrap of evidence forthcoming—a second rebuilding, if it did take place, would not necessarily have entailed any alteration even in the date of the inscription. In the second century the tendency in these matters seems to have been conservative.³

But it is time to return to Birrens. To get the perspective there right, it must be recalled that the Report of 1895 recognised two stages in the history of the fort—a "primary" and a "secondary." It was during the earlier of these that the *principia* was laid out in the position and on the lines which it was destined to retain during the period that followed; such changes as were introduced affected the internal arrangements only. We are all agreed about that. It is over the date when the "primary" period began that trouble arises. If he is to prove his point, Mr Birley must show that it was in A.D. 158, and not (as I prefer

¹ *Roman Forts on the Bar Hill*, pp. 82 ff.

² Cf. *Dumfries, Soc. Trans.*, 3rd ser., vol. viii, p. 81.

³ An extreme instance is the precedent set by Hadrian, who either left or copied the original inscription on all the numerous buildings he restored. A conspicuous example of this is the Pantheon at Rome, which still purports to have been erected by Agrippa, although it had been twice destroyed by fire before Hadrian's restoration.

to think) fifteen or sixteen years earlier, when the Antonine Wall was built: it is essential that he should keep the "secondary" period in hand for his third-century occupation.

One of the two main arguments which he draws from the 1895 evidence is embodied in his paving-stone theory, of which I have, I venture to hope, disposed. The other may be summarised as follows: "In Roman forts in Britain buttressing is reserved for the walls of granaries, where it is normal, and of bath-houses, where it is occasionally employed. But at Birrens the walls of the 'primary' *principia* were buttressed, and so were those of the immediately adjoining *prætorium* or Commandant's House. Although such a phenomenon is unparalleled anywhere else in our island, 'in Raetia, and so far as I have been able to discover in Raetia alone, that is a common method of construction.'¹ Now it so happens that a detachment of the Second Cohort of Tungrians is recorded as being in service in Raetia about the middle of the second century and as having been withdrawn shortly before A.D. 158. It is reasonable to presume that they then joined their comrades in taking over garrison-duty in Dumfriesshire. Must we not believe that it was they who imported into Scotland the novel architectural idea which found expression in the buttressed *principia*, or Headquarters Building, and the buttressed *prætorium* erected in the new quarters of the Cohort? If so, there is no escape from the conclusion that the 'primary' period began in A.D. 158."

Formulated in these terms, the plea is ingenious and plausible, even although it involves the implication that the Romans looked upon buttressing as a form of architectural embellishment, whereas it was merely a practical device for strengthening walls that needed special support, for some such reason as the weight of the roof they had to bear or the instability of their foundations. On the other hand, when the premises on which the argument rests are examined, they are seen to be hopelessly unsound. Let me quote them in their latest form: "We know of no other fort in Britain where such buildings are treated in this way, but in Raetia there are several instances" (p. 282). The statement regarding Raetia is inaccurate and misleading, while that regarding Britain is untrue. This is a hard saying, but the facts do not permit of a judgement less uncompromising.

I will begin with Raetia. Here we are referred for proof to five *castella* in that province and two in Germania Superior (p. 282, footnote). A scrutiny of the plans of all seven results in a picture very different from that which Mr Birley conjures up. The search for a buttressed *prætorium* is everywhere fruitless. Only at Urspring and at Ruffenhofen are there structures that could by any stretch of imagination be supposed to be such, and both of these are described by the excavators as granaries, a

¹ *Dumfries. Soc. Trans.*, 3rd ser., vol. xx, p. 102. That was written in 1937. By 1938 examples in Upper Germany (p. 382, footnote) had been discovered.

diagnosis amply confirmed by the accompanying text. The quest for a Headquarters Building remotely resembling that at Birrens is equally vain. At Urspring the outline of the *principia* is well preserved, but it is completely innocent of buttresses. At Ruffenhofen, on the other hand, not a trace of it is left. Sulz is in almost as evil case, the remains there being fragmentary and the buttresses, if any, doubtful. At the other four forts there are certainly buttresses on the *principia*—one at Schierenhof, three at Murrhardt, four at Gnotzheim, and five or six at Niederberg. Except at Niederberg, however, where five are spaced at equal distances along the back wall, which plainly needed strengthening, all are planted quite irregularly at obvious points of weakness. Such is the sum total of the evidence for the assertion that Raetia provided a model for the Birrens *principia* and the Birrens *prætorium* with their schematically arranged buttresses, twenty-three—originally twenty-four—in the one case, and twenty in the other.

Turning to Britain, I can only suggest that Mr Birley's voyage of discovery must have been restricted to a very limited area. The number of *castella* excavated in our own island is, of course, considerably smaller than the number excavated in Germany, and one might have expected buttressed headquarters to be relatively fewer. Yet, by merely running my eye along my own bookshelves and picking out plans at haphazard, I have actually been able to muster more examples than Mr Birley cites from Raetia and Germania Superior combined. South of the Border he could have found buttresses against the walls of the *principia* at Gellygaer, at Elslack, and at Templeborough. Or, if he had ventured farther into the wilds of Caledonia, he would have seen them at Bar Hill, at Balmildy, and at Cramelon. The last-named site is specially instructive. Although at one point, if not at more, there are unmistakable signs of previous disturbance, the subsoil was evidently somewhat treacherous to begin with. That is plain from the fact that of the nine buttresses reared against the walls of the bath-building in the "South Camp," as many as four are afterthoughts. The building beside it, though incomplete, is clearly neither a suite of baths nor a granary, and yet it has had at least nine buttresses.

As a rule, the buttressing in Britain is obviously designed to serve the same practical purpose as the buttressing in Raetia and Germania Superior. Only in the "North Camp" at Cramelon is there a hint of anything comparable to what Mr Barbour uncovered at Birrens. The *principia* of the Antonine fort there has been buttressed, and so has the building adjoining it on the south. In both cases the buttresses are, in the words of the Report,¹ "intermittent," but their position is such as to indicate that they may possibly represent the remnant of a regularly arranged series. It must be remembered that the ground within the "North Camp" had been

¹ *Proceedings*, vol. xxxv. (1900-1), p. 395.

intensively cultivated, and that sometimes the walls could be followed only by picking up the traces of the clay in which they had been bedded. In these circumstances it is easy to believe that more buttresses might have been noticed, if it had occurred to the excavators to look for them. They are not, however, essential. Even without them there is ample evidence to dispel the Raetian mirage.

We have next to consider what weight can be attached to such arguments in favour of a prolonged occupation as have been drawn (p. 279) from objects discovered at Birrens prior to the recent excavations. The gold coin of Constantius Chlorus, an imperfect description of which had misled both Horsley and Haverfield, is frankly and rightly abandoned. The piece of cut glass, too, tentatively assigned to the third century in the 1895 Report, is apparently surrendered (p. 279), although with a reluctance (p. 335) which it is not easy to understand, seeing that Dr James Curle, who was responsible for the original dating, is no longer prepared to defend it. The gap thus left is filled by three inscriptions "which, though they are not dated, should belong to the third century rather than the second." Since reading this explicit statement, I have several times scanned all three carefully in a vain endeavour to find any justification for separating them from their companions. I admit that I am no epigraphist, but my opinion, for what it may be worth, is fortified by the fact that to my personal knowledge Haverfield more than once scrutinised the whole Birrens group very closely without feeling it necessary to differentiate between the dates of its constituent members. However, it will be only fair to hear what Mr Birley has to say.

Let us take first what he calls "the altar set up by the architect Amandus in honour of Brigantia" (p. 279). The words suggest some doubt as to whether he has examined the stone itself or even the illustration of it in the 1895 Report. Had he done so, he could hardly have failed to notice that it is not an altar at all. It is a statuette of the goddess, standing inside a miniature temple.¹ No explanation whatever is vouchsafed as to why the "altar"—the word is repeated—"should belong to the third century," but we are told that the attribution is "confirmed by Mr S. N. Miller's convincing identification of the dedicator with the Valerius Amandus attested on a German inscription of 208."² To those who have no axe to grind, conviction may well come more slowly than Mr Birley would desire. Mr Miller himself is content to call the identification "possible," or, at the most, to claim for it "some degree of prob-

¹ "*Cippus in formam aediculae exornatus*," as it is put in the *Corpus*, to which Mr Birley himself refers us (*C.I.L.*, vol. vii. No. 1062).

² As Mr Miller points out (*J.R.S.*, vol. xxvii. p. 208), the earliest admissible date is the end of 209, when Geta became Augustus. He rests his case for the identification on the chance of there having been building at Birrens in 210. Matters are obviously not made any easier by Mr Birley's assumption of a reconstruction in 205 (p. 347).

ability," very properly reminding us that "Amandus is not an uncommon *cognomen*." It may be added that *cognomina*, like *nomina*, ran in families, and that, from the days of the ancient Egyptians onwards, technical professions have tended to be hereditary. This being so, is it not at least equally probable that—if the two were in any way connected—the Valerius Amandus, who was an apprentice architect (*discens*) with the First Legion Minervia at Iversheim in A.D. 209, may have been not the same man as, but a descendant of, the presumably full *architectus* Amandus who honoured Brigantia at Birrens? As things stand, then, the dedication really carries us no further.

Nor are "the two altars to Mercury" more helpful. Incidentally, they are not really "altars." They are pedestals, on one of which has stood a "*signum*" and on the other a "*sigillum*." "Style," we are given to understand, is the criterion by which a third-century date for them has been established. This is amplified by the explanation that "the complicated ligatures on one of them and the abbreviation of a rare *nomen* to its first three letters on the other cannot lightly be ignored." Those who are familiar with the originals, or with the illustrations in the 1895 Report, will not hesitate to take the risk. Rather, they will rub their eyes when they read of "complicated ligatures." On the stone in question¹ E & R are ligatured twice, while E & I and E & N are each similarly treated once, all three ligatures being of the very simplest form. Even so, the inscription is too long to be comfortably accommodated on the die, and recourse has accordingly been had to an entirely different but equally common expedient for economising space; one of the ligatures and six of the other letters have been cut very small, so small that four of them are made to nestle in the embrace of an immediately preceding C or G. There is nothing characteristic of the third century about these devices. In fact, on the surviving fragments of the slab of A.D. 158 there are five ligatures at least as "complicated" as any on the pedestal, while the whole of the letters in the fourth and fifth lines have had to be substantially reduced in size, and the R of HADR, which comes at the end of the first, has been cut sufficiently small to admit of its being placed inside of the D. The "abbreviation of a rare *nomen* to its first three letters" is, if that be possible, of still less value as an index of date. Whether he lived in the second century or in the third, the dedicator had the inscription carved for the information of people to whom his name would be as familiar as his features. He was not thinking either of the antiquaries who were to rediscover the pedestal in 1731, or of their more recent successors.²

¹ *C.I.L.*, vol. vii, No. 1080.

² I may be allowed to quote the opinion of Professor Cullingwood, whose twenty years of labour in preparing a *corpus* of the Roman inscriptions of Britain have given him an unrivalled knowledge of their lettering. When the foregoing criticism was written, he was in the Far East and out of reach

So far, then, as the earlier evidence—whether structural or other—goes, Mr Birley's arguments do little or nothing to strengthen his case. Nevertheless, realising the danger of dogmatism, I endeavoured to approach his account of the excavations of 1936 and 1937 with a perfectly open mind. The task of doing so was not, I confess, rendered simpler by a perusal of the Preliminary Report.¹ I am unfortunately old enough to remember 1895 very well. I was then too much occupied with another branch of classical archaeology to interest myself actively in Birrens; but I heard much talk "about it and about," and I have a clear recollection of the almost superstitious reverence with which the remains of the actual handiwork of the Romans were regarded. It was, therefore, far from easy for me to accept a picture which represented Mr Barbour, whom I knew personally, as ruthlessly demolishing the walls which he had planned. Indeed, I cannot but think that, even at this distance of time, my feeling will be shared by all who care to look (or look again) at his own admirable Report.² A structure in the north gateway had certainly been removed bodily, but that was because it was, rightly or wrongly, supposed to be post-Roman.³ Otherwise, I hesitated to believe that the ruins had suffered any damage beyond the inevitable disintegration that must have taken place while the trenches lay open, as they did for a good many months.⁴

When I came to read the fuller Report which is printed in the *Proceedings*, I was faced with the same tale of wanton destruction.⁵ Before I had made much progress, however, I was afforded an opportunity of testing its accuracy. The operations at the western entrance are the first to be described (pp. 284 ff.). A full-page illustration (p. 285) shows two quite different plans, placed in juxtaposition and entitled respectively "West Gate 1895" and "West Gate 1936." The latter is a carefully measured drawing of a mass of stonework which was exposed by Mr Birley in the year named, and which Mr Richmond acutely recognised as the

of correspondence, but since his return I have been able to consult him. He is in full agreement with my estimate of the value of Mr Birley's specific arguments in favour of a third-century date for the three inscriptions under discussion. On the general question he writes that the Birrens inscriptions form a more or less homogeneous group, some of which may be later than others, although all of them must belong to a period extending from c. A.D. 150 to c. A.D. 225. "The building-stab, however, is firmly dated to A.D. 158; none of the others is very far away from it in style; the group as a whole represents a local and unbroken tradition of workmanship and design. It is very difficult to suppose that such a highly individual tradition could survive a major disaster c. A.D. 196; therefore, falling any positive evidence for placing any of them after that date, one is inclined to place them all before it, if about that date Birrens suffered a major disaster. . . . I do not see how anyone can distinguish, say, Marcus Aurelius from Pius on the one hand and Severus on the other. I feel it quite possible that all this group might be M. Aurelius."

¹ *Dunfries, Soc. Trans.*, 3rd ser. vol. xx, pp. 57 ff.

² *Proceedings*, vol. xxx. (1895-96), pp. 100 ff.

³ *Op. cit.*, p. 102.

⁴ Work began in May 1895, and the trenches were not filled in until the following January; see *op. cit.*, p. 91.

⁵ "As we were to find elsewhere at Birrens, the remains had been badly robbed after their planning had been completed" (p. 290).

rubble filling of a timber framework, such as has frequently been observed in the gateways of Roman forts abroad. The former is an enlargement to five or six magnitudes of the gateway shown on Mr Barbour's plan. On the strength of this enlargement, supported by a quotation from the 1895 Report to the effect that "the masonry was good, the stones, of various sizes but generally small, being squared and well fitted in bonded courses,"¹ we are informed that "the gateway structures planned in 1895 had been wholly removed after the planning of them had been completed" (p. 284).

At first the conclusion seemed inevitable. For the reasons already explained, however, I was a little reluctant to take it at its face value, and accordingly I thought it well to scrutinise somewhat narrowly the process by which it had been reached. Beginning with p. 285 I could not but recall a warning once given me by an architect of experience: a good plan by another hand, he told me, could always be reduced with safety, whereas the converse process was never free from the risk of distortion, no matter how exact the original might be. Then, when I turned to the 1895 Report, I noticed that Mr Birley's quotation was incomplete. The whole sentence runs: "The remains were only from a foot to 18 inches high, and rather ruinous, but where best preserved the masonry was good, etc. etc." It was obvious that this might quite well have been written of the rubble filling, the phrase "where best preserved" referring merely to the facing.² At this juncture I asked Mr Richmond—without giving him any hint of the object of my question—at what depth the rubble filling had been encountered. When he replied that it "was on a level with the bottom of the rampart," I knew that my suspicions were well founded, for these are the *ipsissima verba* of the 1895 Report. I thereupon told him what was in my mind, and he at once agreed that I was right. All that had been done in 1936 was to lay bare the stonework that had been carefully covered up by Mr Barbour more than forty years before!

That is a disquieting mistake, hardly calculated to inspire implicit confidence in what follows. It would never have been made if the 1895 Report had been thoroughly digested before the new digging had begun or while it was in progress. Nor is this the only sign which seems to point to a neglect of that elementary precaution. Thus, in the efforts to distinguish between "primary" and "secondary" walls, I can find no reference to those differences in methods of construction which Mr Barbour was careful to emphasise,³ and I can see no indication of heed being paid to

¹ *Op. cit.*, p. 103.

² Since the above was written, the apparent inconsistency has been still further reduced by a letter which has reached me from a friend who saw the stonework in 1936 and who has now read the Report. While accepting Mr Richmond's explanation, he thinks the word "rubble" somewhat inappropriate. "The stones," he says, "were all hammer-dressed, so that their faces were rectangular."

³ *Op. cit.*, p. 118.

his warning that, for reasons which he states, "the general tints in the plan probably embrace a considerable proportion of secondary work, which it has not been possible to show in its proper colour."¹ Readers who are conscious of these omissions will not feel altogether comfortable about the account that is given of the excavations undertaken at four points in the interior. I at least have found it uncommonly difficult to understand the various descriptions, nor am I at all certain that I have succeeded in doing so.

Any attempt at detailed criticism would therefore be futile. I must content myself with saying generally that, while still prepared to consider the question at issue without prejudice in one direction or another, I have so far seen no single fragment of structural evidence for the existence of a building that was necessarily later than the end of the second century. The photographs of three successive flagged floors (pp. 288 f.), for instance, leave me unimpressed. Elsewhere Mr Birley himself has argued cogently that the laying of one floor on the top of another may merely mean "renovation and not restoration after destruction,"² and in the present case, if he is right in thinking that the building concerned was a stable, renovation would undoubtedly be required, for no flagged floor could possibly have survived the stamping of horses' hoofs for periods ranging from nearly forty to more than ninety years. I am not sure, however, that those who share my hesitation about accepting the theory of a third- or fourth-century occupation will wish to take this way of escape. They may think that, even on the hypothesis of "one floor, one period," all three (Levels II-IV)³ can be quite satisfactorily accounted for on the supposition that the uppermost belongs to the time of Julius Verns.

If so, it will be to Mr Birley's own work that they are indebted for the alternative. What is, to my mind, by far the most interesting and valuable result of his excavations is the recovery of positive structural evidence for two periods earlier than the "primary" of 1895. During the first of these (his Level I) some at least of the interior buildings were of timber. During the second (his Level II) the interior buildings were of stone, while the area of the whole fort was substantially smaller than it afterwards became. In his Preliminary Report he was disposed to date the timber period to the first century.⁴ Without committing himself definitely, he now inclines to assign it to the reign of Hadrian. In either event he believes that the smaller fort lasted until A.D. 158, when it was rebuilt on a larger scale by the Second Cohort of Tungrians. The life of this enlarged fort (his Level III) he regards as covering the "primary" period of 1895, the "secondary" period (his Level IV) representing a "Severan reconstruction."

¹ *Ibid.*, p. 114.

² *Arch. Act.*, 4th ser., vol. vii, pp. 172 f.

³ Level V is a purely imaginary reconstruction, the validity of which can only be maintained by flagrantly disregarding Mr Barbour's warning as to the reliability of the tinting.

⁴ *Op. cit.*, p. 68.

which he supposes to have taken place *circa* A.D. 200, and to have remained in use during the whole of the third century. It will be time enough to refer to his Level V when structural proof of its existence has been obtained.

The chronological scheme just outlined is put forward on a provisional basis only (p. 290), but a moment's reflection will show that even on such a basis it cannot possibly stand, unless and until the evidence of the building-inscription has been disproved by some explanation more plausible than that embodied in the paving-stone theory. On an equally provisional but perhaps a less obviously precarious basis I would venture to put forward the following alternative as a "working hypothesis." It does not seem to be necessarily inconsistent either with such structural evidence as has so far come to light or with the little that we know of the historical setting.

Period I, c. A.D. 80.—Agricola's invasion; area of the fort unknown; timber used for some at least of the interior buildings.

Period II, c. A.D. 120.—Construction of Hadrian's Wall, with Birrens as an outlier; area of the fort uncertain, but smaller than at present; interior buildings of stone.

Period III, c. A.D. 142.—Construction of the Antonine Wall and re-occupation of the whole of Southern Scotland, with consequent enhancement of the importance of Birrens; fort enlarged to accommodate the First Cohort of Germans, which was *milliaria equitata*—that is, 1000 strong, with a mounted detachment.

Period IV, c. A.D. 158.—Revolt suppressed by Julius Verus; fort rebuilt on the same lines after a temporary abandonment, the First Cohort of Germans being relieved by the Second Cohort of Tungrians, which was likewise *milliaria equitata*.

How far this "working hypothesis" will stand the test of future investigation depends mainly upon the results of the further examination of the rampart. Mr Richmond's description of the three sections which he cut through it (pp. 302 ff.) is a model of careful statement, and his drawings give all the information that is necessary to make it intelligible. But he agrees that it is not yet possible to associate the history of the buildings with the history of the defences. Let us trust that what he calls "the remaining chance" of doing so will not be irreparably destroyed by over-hasty action. As matters stand, it is beyond cavil that the rampart which we know is of Antonine date, like the buildings which it enclosed, but that it has yielded unmistakable proof of two periods of construction—one when it had a breadth of about 20 feet only, and another when an extension some 10 feet wide was added at the back. The fact that the extension partly overlay an *intervalum* road left no room for doubt that it had been accompanied by a rebuilding of the interior.

Could one have stopped there, everything would have been plain sailing—the two stages of the Antonine rampart corresponding to the "primary"

and "secondary" masonry of 1895. It is not, however, quite so simple as all that. At the front there was evidence of some refurbishing which, as Mr Richmond points out, may or may not have been contemporary with the extension at the back. Further, there were indications that the extension itself had been reinforced by a later revetment which, at the one point where it was uncovered, seemed to take the form of a ramp for stairs. Was the addition of this revetment a change made in the course of an unbroken period of occupation, or is it part of a complete reconstruction of Severan or subsequent date? If the latter, it becomes imperative to remove the stumbling-block of the building-inscription by some reasonable explanation.

It will be a delicate matter to determine the full significance of the various changes and to correlate them with those that took place in the buildings in the interior. But if it can be done—Mr Richmond is evidently a little doubtful—we shall know very much better where we are. Another but a less difficult task will be to ascertain the precise purpose of the posts and horizontal beams of wood which Mr Richmond encountered in the body of the rampart—a discovery, by the way, which did something towards restoring my own sense of self-respect. Some years ago I drew attention to the record of a post-hole preserved in one of the sections of the rampart which had been made in 1895.¹ I am ready to admit that my tentative interpretation of its presence will hardly survive the emergence of the new data, and that it is far less probable than the one put forward in the Report (p. 305). Nevertheless, it was comforting to find that my suggestion that it *was* a post-hole had deserved a little more consideration than was implied in the observation that it was "based on a misunderstanding of the conventions employed by Mr Barbour."² The recognition of the aqueduct, already alluded to in a footnote, is another interesting advance. Now that it has been brought to our notice (pp. 306 ff.), we can all see that an installation of the kind must have been a most valuable, if not an indispensable, adjunct to a fort in which there would be several scores of horses to water.

Coming next to the finds, which can be dealt with much more briefly, I will begin, as Mr Birley does, with the section dealing with the pottery. Apart from Mr Richmond's two short contributions, to which I have just referred, this is likely to be the most permanently useful part of the whole Report (pp. 309 ff.). The description of the decorated Samian ware embodies some most instructive notes, as well as some admirable drawings, by Mr J. A. Stanfield, whom the Society will be glad to welcome as even an indirect contributor to its *Proceedings*. I doubt whether any one could usefully add to what he has said so clearly and so well. At the risk of being egotistical, however, I must register a mild protest against

¹ *Proceedings*, vol. lxvii. (1932-33), p. 289.

² *Dumfries. Soc. Trans.*, 3rd ser., vol. xx. p. 67.

the odd misrepresentation of my own views to which the editor has given a prominence it hardly seems to deserve. Because I suggested that in all likelihood "the plenishing of the fort canteens was in the hands of some central authority,"¹ I am credited (p. 309) with assuming "that pottery was issued to regiments, and owned collectively by them," an "assumption . . . belied alike by what we know of the organisation of the Roman army and by the frequency with which vessels are found bearing the name of an individual owner."

On the question of ownership my view has been quite unequivocally expressed. Speaking of the Samian from the Antonine Wall, I wrote "that a fair number of the fragments, as well as a few of the pieces of coarser ware, have scratched upon them what is presumably the name of the owner, indicating that the vessels of which they had formed part were the private property of those who habitually used them."² For the rest, after referring to "some central authority," I added that "of the working of the organisation we know absolutely nothing." Perhaps I should have said "I" rather than "we." But Mommsen's discussion of the supply-system of the Roman army³ shows how utterly inadequate was the information accessible even to him, and Egypt has so far failed to throw much additional light upon the matter. At the same time, although the evidence is too scanty to yield detailed information, inscriptions of a *copiis militaribus*, a *copiis castransibus*, a *praepositus copiarum expeditionis*, and a *dispensator rationibus copiarum* create a very strong presumption that, however it was managed in particular regions, supply of materials was a government responsibility. That being so, to me at least it seems incredible that the responsible officials left either the officers or the rank and file to pick up or to replace their equipment from such chance pedlars as happened to visit the neighbourhood of the *castellum* where they were stationed. Nor is it out of place to recall that one of the grievances of the mutinous legions of A.D. 14 was the arrangement under which the cost of "*vestem, arma, tentoria*" was deducted from their pay.⁴

Furthermore, I was rash enough to say that under such a system as I had envisaged, individual soldiers would be more restricted in their liberty of choice than would ordinary townsfolk who were free to buy for themselves in the open market.⁵ That, I should have supposed, was the merest truism. But it is denounced as "clearly tendentious," and we are told that "the present small series of decorated Samian from Birrens provides an admirable example of the variety of sources on which troops in garrison at a single fort could draw." This is, no doubt, true. Yet the mere handful of surviving fragments must represent so infinitesimal a fraction

¹ *Journ. Roman Studies*, vol. xxv, p. 197.

² *Staatsrecht*, vol. iii, p. 1031, n. 2.

³ *Journ. Roman Studies*, vol. xxv, p. 197.

⁴ *Roman Wall in Scotland* (2nd ed.), p. 458.

⁵ *Tac. Ann.*, III, i, c. 17.

of the total number of dishes in use during the long years of occupation, that it would have seemed to me idle to expect them to provide evidence on the main issue. Mr Birley's insistence, however, has made me look into the matter, with the result that it appears to me quite possible that, after all, they do. The Birrens excavations of 1895 yielded several fragments of a very remarkable and distinctive variety of decorated Samian, unlike anything I have ever seen from any other British site, civil or military, although I have noted several parallels abroad.¹ To my mind that is suggestive of "block-purchase" rather than of "*negotiatores cretarii*." More striking still is the fact that of the forty-six fragments of plain first-century Samian from Newstead, bearing stamps, as many as eight came from the pottery of VITALIS, whose wares have not been found anywhere else in Scotland.²

The account of the coarse pottery is Mr Birley's own, and it is but right to begin by acknowledging the value of the service he has rendered in accumulating such a useful store of comparative material. It is to be hoped that he will carry out his expressed intention of publishing a *corpus* of the mortarium-stamps of Roman Britain. No one could do it better. This acknowledgment made, I must go on to say that I neither accept nor reject what he himself must regard as the main conclusion to be drawn from his study of the coarse pottery: if I mistake not, it is upon this that he chiefly relies for proof of his "point." I have not seen the fragments and, even had I done so, I know too little of the niceties of the subject to express an opinion that would carry weight. On the other hand, in the light of the criticisms which I have been compelled to pass on the handling of some of the earlier evidence, I feel bound to suspend judgement on the age of the potsherds for which Mr Birley claims a third- or fourth-century date, until his verdict has been confirmed by some one who is at least as knowledgeable in these matters as he is himself, and is not exposed to the temptation inherent in having a "point" to prove.

I think I can promise not to treat the consultant's judgment on the individual pieces with the same light-heartedness as Mr Birley displays towards Mr Stanfield's dating of one of the fragments of decorated Samian (pp. 312 f.).³ On the other hand, should it agree with Mr Birley's, I cannot undertake to accept it as proof of a Roman occupation of the site in the third and fourth centuries, until the building-inscription has been got

¹ *Op. cit.*, p. 109.

² *Proceedings*, vol. lxx, (1930-31), p. 442.

³ Mr Stanfield attributes the piece to a Trajanic potter and dates it to c. A.D. 110-115. Readers of the *Journal of Roman Studies* do not need to be told that an admission that such a fragment had been found at Birrens would be fatal to one of Mr Birley's most cherished beliefs. They will not, therefore, be surprised to see the Trajanic potter transformed, by a wave of the editorial wand, into a "border-line potter . . . whose work may be expected on Trajanic and on Hadrianic sites." The only moral I draw from the incident is a confirmation of the views I have expressed elsewhere as to the dating-value of Samian ware (*Journ. Roman Studies*, vol. xxv, pp. 187 ff.). Useful as it often is, it is not an instrument of precision.

out of the way and until the evidence of the rampart has been securely tied to that of the structures which it surrounds. In the meantime, I would point out that much searching on Mr Birley's part has produced no more than what it would be an exaggeration to speak of as a sprinkling of sherds which can, in his view, be regarded as late. In this and in other respects the excavations at High Rochester, Risingham, and Bewcastle—Netherby is as yet unexplored—seem to have yielded exactly what Birrens did not. Consider, for example, the collection of hammer-headed mortaria and other late pottery from the first of these sites, now preserved at Alnwick Castle. It is unnecessary to say more on the subject for the present, but it is worth recalling that, as is proved by the quantities found in the native settlement on Traprain Law, a great deal of late Roman pottery continued to find its way into Southern Scotland long after Hadrian's Wall became the frontier.

The only other section of the Report which calls for any remark at this stage is that which deals with the coins (pp. 339 f.). Eleven were found in 1937 and one in 1936, and these are excellently described, so far as description was possible, by Mr W. Percy Hedley. All of them were, as he says, in poor condition, and only six could be deciphered. The most interesting thing about them was that, as I have been able to satisfy myself by personal examination, even among those that were illegible there was none that suggested a date later than the second century. Their testimony was, therefore, in complete harmony with the view, generally accepted since it was advanced by Haverfield forty years ago, that the numismatic evidence proves Scotland to have been evacuated by the Romans some time in the reign of Commodus, never to have its peace disturbed by them again except for the expedition of Severus. That view, of course, does not fit Mr Birley's novel reconstruction of our history, and he is fully aware that, unless and until it is upset, he can hardly hope to make many converts. Accordingly he attempts to disprove it (p. 343).

The principle itself he summarises with a fairness and lucidity that could not be improved upon:

Briefly, the key-stone of the current archaeological interpretation is the absence of coins later than the time of Commodus from all Roman forts in Scotland, with the exception of Cramond; this absence is held to justify the view that, with that exception, none of those forts was occupied in a later period.

On the other hand, if his only reply has not been penned in ignorance of the facts, then "clearly tendentious" would be too mild an epithet by which to describe it:

At first sight the argument may seem a sound one; but it should be remembered that the total number of coins from the Antonine Wall is not

very great, and it may be useful to point to the case of Housesteads fort on Hadrian's Wall, where the excavations of 1878 produced as many as 129 coins which did not include a single one between the time of Commodus and that of Elagabalus; yet that fort continued in Roman hands until the close of the fourth century, and it has produced fragments of a Severan building-inscription.

In the first place, no one is in a position to estimate "the total number of coins from the Antonine Wall." When the older authorities say "*denarii* of Domitian, Trajan, and Faustina," or "*denarii* of Trajan, Hadrian, and Antoninus Pius," they may mean a single specimen of each or they may mean a score. In the second place, the principle which Mr Birley rightly calls a "key-stone" does not depend for its validity, as he seems to suggest, upon the evidence from the Antonine Wall. It was formulated before a single one of the forts on the Wall had been excavated, and all that their excavation has done has been to confirm the soundness of Haverfield's original generalisation. Apart from two doubtful attributions to Commodus himself, the latest coin from any of the Forth and Clyde *castella* is a *denarius* of Lucilla from Old Kilpatrick, which cannot have been struck after A.D. 183. In the third place, if there was any serious desire to apply the test of a "very great" number, why were not the figures from Newstead cited? There the 260 coins actually identified did not include even a single Commodus. The latest was a *denarius* of Crispina, which would be of approximately the same age as the Lucilla from Old Kilpatrick.

Thus much for the presentation of the Scottish side of the case. The presentation of the English side is even more unsatisfactory. If the comparison was to be of any value, it should surely have been explained for the benefit of the uninitiated that, whereas in Scotland a yawning gulf stretches from A.D. 183 to infinity, the blank at Housesteads extends over no more than the thirty-four years which represent the difference between the date of the solitary coin of Commodus and the date of the solitary coin of Elagabalus. It should further have been pointed out that the imposing total of 129 for Housesteads is arrived at by including 44 which were illegible. There is perhaps just a possibility that one or two of these might have done something towards bridging the gap. On the whole, however, that seems to me unlikely. Had it been so, Professor Bosanquet could hardly have failed to allow for the contingency, due warning of which would have been given by the size of the pieces in question. Moreover, the general complexion of his list¹ suggests that the whole 44 were later than Gallienus. We are thus in a position to set out the numismatic argument from the two sites in the only form that is at once fair and intelligible. As Mr Birley has chosen to bring in Scotland as a whole,

¹ *Arch. Ael.*, 2nd ser., vol. xxiv. pp. 297 f.

I add the figures from Newstead, the single Scottish fort which has produced numbers worthy to stand alongside of those from Housesteads.

	Coins earlier than A.D. 200.	Coins later than A.D. 200.
Housesteads	14	115
Birrens ¹	18	None
Newstead	260	None

I think there will be general agreement that the comparison with Housesteads has been "useful." I shall be surprised, however, if anybody believes that it does much to help Mr Birley's case. If his reading of the history of Birrens is correct, the garrison of this "outlier" of Hadrian's Wall must have known how to keep the pockets of their trousers very tightly buttoned up during the last century and a half of the occupation, the very period when casual losses of money seem to have been most common on the Wall itself. The contrast is even more noteworthy than that between the pottery from Birrens, as dated by Mr Birley, and the pottery from High Rochester; the complete absence of third- or fourth-century coins is just as significant as the absence of third- or fourth-century inscriptions. It is needless to analyse the evidence further, and equally needless to discuss the section of the Report devoted to Conclusions (pp. 340 ff.). As the foundations of the architectonic scheme of periods therein embodied have been undermined, the whole structure must inevitably collapse like a house of cards. If it is to rise from its ruins, it must be built up anew on a much more stable groundwork. It may be that this can be done. I am not foolish enough to close my mind to the possibility of that or of other surprises which Birrens may have in store. None the less I am satisfied that the attempt I have been considering, courageous though it be, must be pronounced a failure.

¹ I exclude the six that were illegible, even although their appearance suggests a second-century date. I further exclude the Germanicus found "near the camp of Middleby" in the eighteenth century, and also, of course, the aureus of Constantius Chlorus (*Proceedings*, vol. lii. (1917-18), pp. 217 f.). On the other hand, I include the worn bronze of Domitian "said to have been found during the excavations at Birrens in 1895 by one of the workmen employed there," from whose daughter it was acquired by Mr A. Cunningham of Larchfield, Ecclefechan (p. 340), although I am compelled to apply Mr Justice Starelegh's famous dictum to the *antoninianus* of Victorinus, which is credited with a similar history. I have no record of the discovery of a single specimen of this denomination in Scotland, although it was common enough south of the Border. Even the great Falkirk hoard of 1933 contained no examples (*Num. Chron.*, 4th ser., vol. xiv. p. 26). I need hardly say that my decision involves no imputation on the *bona fides* of the present possessor of the coin or even of the vendor. Mr Birley himself admits that "its credentials might have been better."

III.

AN EARTH-HOUSE AT GRIPPS, FROTOFT, ROUSAY.
ORKNEY. By WALTER G. GRANT, F.S.A.Scot.

Early in April 1937, while Mr George Reid, farmer, Tratland, was harrowing a field of oats on the adjoining farm of Gripps, one of the harrow tines so displaced a thin-edged stone that it would have interfered with future farm work. Mr Reid, on trying to pull it out of the ground, found it to be quite loose but could not extract it. When he let go his hold the stone fell into a cavity which, on a little investigation, proved to be an earth-house. A lintel stone that was broken across was removed, and access to the chamber, which had not been filled up by the infiltration of soil, was obtained. After the mouth of the entrance passage had been cleared of accumulated soil, the broken lintel, which had first drawn the attention of the farmer and was subsequently removed, was replaced by a similar slab from the beach nearby and the surface of the field was levelled up.

The building is situated about 40 feet above high-water mark, some 120 yards north-north-east of the shore of Eynhallow Sound and 150 yards west-south-west of the farm steading of Tratland. Before its discovery there was not the slightest surface indication of the presence of any building.

In constructing the earth-house a trench had been dug into the clayey subsoil towards the rising hillside, running in a north-east direction for 12½ feet, where it turned to the north into the widened chamber (fig. 1).

The trench and inner enlarged part were then roofed over with slabs set from 6 inches to 27 inches apart; these in turn carried generally lighter slabs laid lengthwise with the passage and chamber. The clay walls of the trench and chamber were left unfaced by building, but additional support to the cross-lintels in the chamber was given by five slabs set on end against its natural clay walls and by one pillar formed of built masonry.

Entrance to the passage is obtained by two steps down, the first cut into the clay and the second having a laid stone tread. The passage therefrom measures some 40 feet long with an average width of 2 feet 6 inches, a height of 2 feet 8 inches at its outer end, and, the floor rising some 4 inches, a height of 2 feet 4 inches at the inner end.

The inner chamber running south to north measures approximately 8 feet in length and 3 feet in greatest width; its maximum height in the centre is 2 feet 11 inches.

From 2 to 6 inches of silt covered the floor, and the scarcity of relics

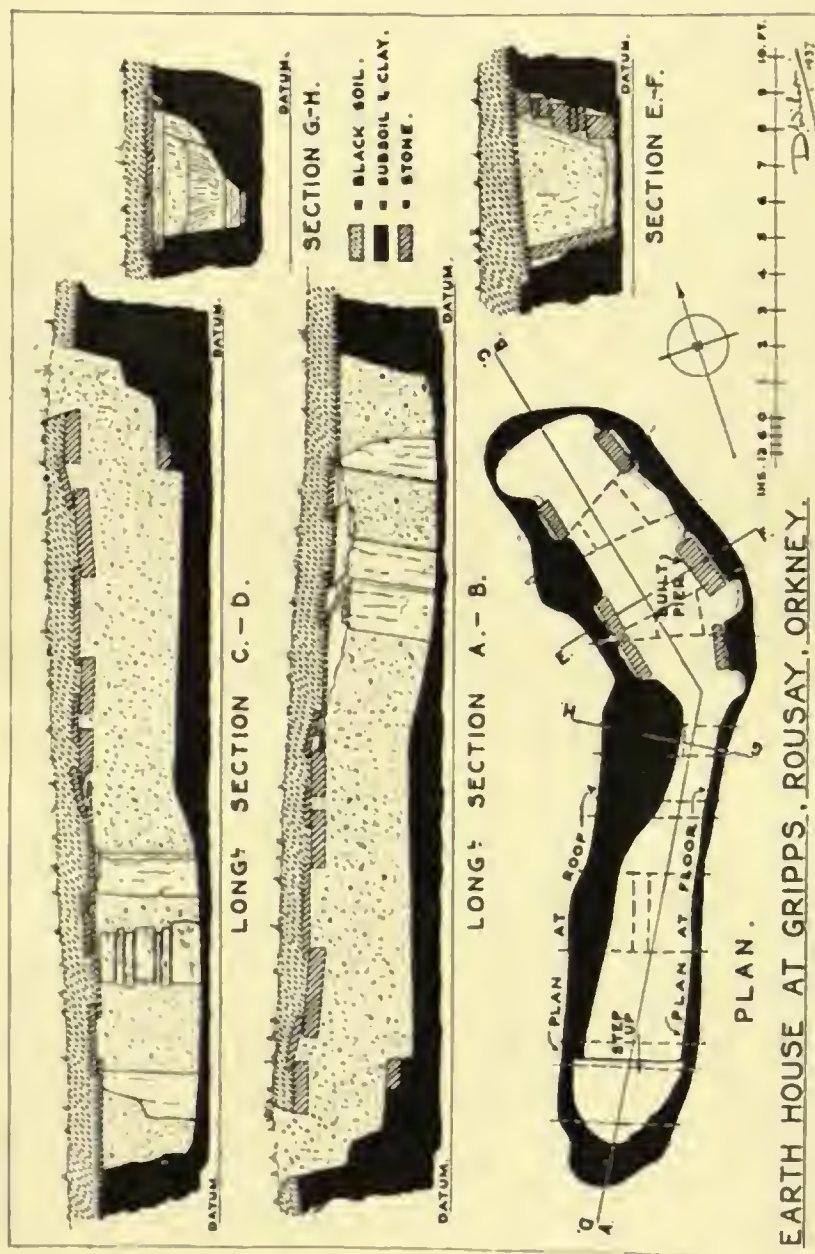


Fig. 1.



Objects of stone from an earth-house at Gripps, Rousay, Orkney.

which it contained was disappointing. Of stone there were an oblong object (Pl. LXXXII, 1) with rounded corners, having two notches on one edge and measuring $11\frac{1}{4}$ inches by $7\frac{1}{2}$ inches by $1\frac{1}{8}$ inch; a rude club-like implement (Pl. LXXXII, 2) $10\frac{7}{8}$ inches in length; a cleaver-like implement (Pl. LXXXII, 3) $10\frac{7}{8}$ inches in length, and a hammer-stone.

Four pieces of pumice were also found, two being round and another grooved on one side.

The pottery comprised the rim and portion of the wall of a vessel (fig. 2) of dark red ware containing crushed stone. The mouth has been about $8\frac{1}{2}$ inches in diameter and the wall is $\frac{5}{16}$ inch thick. There were also a small rim fragment, flat on top and $\frac{3}{8}$ inch in thickness, a basal fragment, a few more fragments of other vessels, and two small pieces of what looks like a clay mould.

A human molar, parts of the tooth of an ox or deer, the crown of the milk tooth of a pig, fragments of animal bones (unidentifiable), and a splinter of flint were also recovered.

It is well known that in Orkney there is a class of earth-house of very small size which so far has not been recorded from any other part of Scotland. Such have the lintelled roof supported by pillar stones often brought up to the requisite height by the insertion of small slabs. These pillars are frequently placed some distance from the wall. Sometimes the wall is of the natural clay, but at times this is supplemented by building. In the earth-house described the walls are formed entirely of the natural subsoil, against which the supports of the roof are placed, and it is notable in having a longer entrance passage than any of the other Orkney examples.

Mr Reid has earned the thanks of all Scottish archaeologists for the steps he took for the preservation of the building, and I was glad to have the opportunity of discussing the structure with the late Dr Graham Callander, who was able to visit the site a few weeks after its discovery.



Fig. 2. Section of a vessel of dark red clay from an earth-house at Gripps, Rousay, Orkney. (1.)

IV.

TWO SCOTTISH THIRTEENTH-CENTURY SONGS, WITH THE ORIGINAL MELODIES, RECENTLY DISCOVERED IN SWEDEN. BY THE REV. JOHN BEVERIDGE, M.B.E., F.S.A.Scot., KNIGHT OF ST OLAF (NORWAY).

Early in 1938 the Curator of Historical Records in H.M. Register House in Edinburgh received from Norway an account of the discovery or recovery of two thirteenth-century songs with the original music. The text and melodies are quite free from error, a fact which indicates that here we have copies very near to the originals. The songs are, of course, in Latin, and the melodies are in the ancient notation.

The discoverer was Professor Sir Oluf Kolsrud, a Fellow of Oslo University and Hon. D.D. of Glasgow University. He is Conservator of the Norse Historiographical Archives and a distinguished writer on historical subjects. In the course of research in the Library of Upsala University he lighted upon and examined a parchment manuscript dating from the second half of the thirteenth century. Among the varied contents of this Codex Upsalensis C233 were two unrecorded Scottish songs. One was an epithalamium or hymn sung at the wedding of the Princess Margaret of Scotland to King Eric of Norway at Bergen in 1281. The other was a hymn in praise of St Magnus, Earl of Orkney, who died in 1115 and was enshrined in 1135. He was the patron saint of Orkney, and in his honour the Cathedral of Kirkwall was built and dedicated.

Dr Kolsrud has described the Codex with meticulous care in *Two Norrøne Latinske Kvaede Med Melodiar*, with plates (Pls. LXXXIII and LXXXIV). For the music of the songs he invoked the expert assistance of Dr Georg Reiss, a pioneer in and authority on the Norse music of the Middle Ages. He made a careful study of the melodies and music, and has published the result of his researches, showing the remarkable value of these songs from a musical point of view. And in this paper we endeavour to give an accurate version of the conclusions of Sir Oluf Kolsrud and Dr Georg Reiss.

THE MARGARET-ERIC MARRIAGE CONTRACT.

The Norwegian King Magnus died in Bergen on the 9th of May 1280, and his son Eric immediately succeeded him. On the 17th of that month the new King sent a letter to Edward I. of England reporting the death of his royal father, and intimating that his coronation would take place in due time. To King Alexander III. of Scotland there was sent an embassy suggesting the desirability of a marriage between the young King Eric and

the Princess Margaret. Political considerations probably prompted the proposal, and the suggestion was welcomed. A Scottish embassy took back a favourable reply. Negotiations occupied about a year; but the marriage contract was at last drawn up and signed at Roxburgh Castle on 25th July 1281.

In August 1937 nine out of more than 170 historical documents that had been missing from Scotland for about 650 years were transferred from the Record Office in London to the Register House in Edinburgh. Of these sole surviving documents returned from exile the longest and best preserved is the marriage contract between the daughter of King Alexander III. of Scotland, Princess Margaret, and King Eric II. of Norway.

King Alexander had married the eldest daughter of the English King, Henry III. Their daughter was called Margaret after her mother, and she was famous for her beauty and her gentle character. Among the witnesses to the Margaret-Eric contract are found the names of barons of Norman stock, as well as representatives of the old Scottish nobility. The seals of the signatories are lacking, but tabs show where they were affixed. There are thirty-three sections in the contract, and here we only give their gist.

The Norse and Scots had for long been warring with one another, and this state of matters culminated at the battle of Largs in 1263, following which, by the Treaty of Perth, on the 2nd of July 1266, the Sudreys and Man were ceded to Scotland. Thereafter friendlier relations commenced, and the marriage of Eric and Margaret was intended to cement the bonds between the two countries.

King Alexander for himself and in name of "the noble damsel Margaret, his dearest daughter," with consent of his son, Alexander, and the whole of the King's Council on the one part, and Peter, Bishop of Orkney, Bjarne Erlingsson, Baron of Bjarkey, Bjarne Lodinsson, Chancellor of King Eric, and Friar Maurice of the Minorite Order, on the other part, agree to the marriage between King Eric and the Princess Margaret.

Alexander contracted to give with his daughter a dowry of 14,000 marks sterling, to be paid at Bergen in four instalments, the first to be taken with Margaret to Norway. The Norse representatives promised on behalf of King Eric that the Princess Margaret on her arrival in Norway should receive 1400 marks worth of land with a competent manor, and a castle or secure mansion where she with her servants should remain at the expense of King Eric until the nuptials were celebrated, and that on the wedding day, or, in the event of lawful impediment, as soon as possible thereafter, Margaret should be crowned as queen. And provision was made for the disposal of the land and money in the event of the death either of Eric or Margaret, and for provision for any issue of the marriage.

"XVI. If it shall happen that the King of Scotland decease without a

lawful son and that none of his sons leave lawful issue and that the said Margaret have children to the King of Norway, then she and her children shall succeed to the said King of Scotland and his children as well in his kingdom as in other goods; or she herself if she be without children according to the law and custom of Scotland. And generally the said King of Scotland consents that his said daughter and all descending from her shall be admitted freely to all successions and all other rights which can in any wise fall to them according to the law of Scotland or the custom of that kingdom."

The King of Norway is obliged to hold binding all the premises until he completes his fourteenth year and then fully to ratify the same; if, before or at that time, he contravene the terms of the treaty he shall pay to the King of Scotland, or his representatives, for damage interest and expenses, the sum of one hundred thousand pounds sterling, and if, on completing his fourteenth year, he fail to ratify and consummate the marriage, or to refund expenses, interest and penalty, to the King of Scotland he shall forfeit the sum of one hundred marks which he receives yearly from that king, together with the whole land of Orkney. Likewise King Alexander obliges himself, should he or his daughter contravene the terms of the agreement before King Eric completes his fourteenth year, to pay a like sum of one hundred thousand pounds to the King of Norway, to whom they are obliged to fulfil their engagements under penalty of ceding the whole Isle of Man.

The Norwegian signatories promise that the Queen Mother of Norway and the magnates of the realm shall ratify this contract in presence of the Scottish envoys; and the King of Scotland and his daughter have ratified the same in the presence of the representatives of the King of Norway; and certain personages become hostages to remain with the King of Scotland until the marriage is completed, and if they are not then released the Isle of Man will be surrendered.

THE MARRIAGE AT BERGEN.

It was on the 11th August 1281 that the Princess Margaret embarked at Berwick for Norway. She was accompanied by the Earl and Countess of Menteith, Bernard of Montealto (Mowat), the Abbot of Balmerino, and others. Four days later the ship dropped anchor in the port of Bergen. Naturally King Eric received his bride with becoming honour, and the whole populace welcomed the Scottish Princess with demonstrations of great joy, whilst the clergy conducted a service of thanksgiving for the safe journey and arrival of the queen-to-be.

According to the Marriage Contract the wedding was to take place before the 8th of September, but by the 31st of August all the arrangements

for the nuptials had been made. Archbishop Jon and all the bishops, with most of the chiefs and magnates of the land, were gathered for the occasion. It had been agreed that Margaret should be crowned on the wedding day. For some reason the King's mother, Queen Ingebjorg, was opposed to this; but the coronation was duly proceeded with, the Archbishop himself discharging the duty with great ecclesiastical ceremonial, as had been customary in Norway. And at the wedding and coronation services the recently discovered epithalamium was rendered by a choir in unison, or as an alternating hymn by two choirs. The late Dr Georg Reiss of Oslo, to whose notes we have been so much indebted, translated the original music (Pl. LXXXIII) of the Epithalamium into the modern notation (Pl. LXXXV). The Latin verses have been freely rendered thus:

THE MARRIAGE ODE.

From thee, O fairest Scotland, springs that light benign,
Which over Norway like a radiant dawn doth shine.
Breathe freely now once more, since God doth safely bring,
Across the perilous seas, the daughter of thy King.

And now the torch of peace is lit: his royal grace,
This day proclaimed and sealed, rejoiceth all our race.
The skies on every side with acclamations shake,
While England most of all doth in the joy partake.

Lo! to King Eric now is brought the royal maid
To whom with fitting pomp is highest honour paid.
With one accord the nation breaks into her praise
And songs of welcome loud a thousand voices raise.

A brilliant throng in haste assembles, dame and knight,
The flower of chivalry, to view the sacred rite:
Then high and low, together mingled in their glee,
Speed swift the joyous hours with feast and revelry.

In triumph now the king lends forth the lovely bride,
The regions of the world rejoice on every side.
The God of all this union bless with richest grace,
And from this royal pair upraise a worthy race.

She mounts the throne; the crown is set upon her brows.
To her, as to the King, Norwegia gladly bows;
To her is highest reverence paid by high and low;
All praise to God's good Son, who hath ordained it so!

Too weak are human words her virtues to express;
How rich in all discretion, truth, and gentleness!
Her modest eloquence, how full of power! how free
Her bounty, and how sweet her gracious dignity!

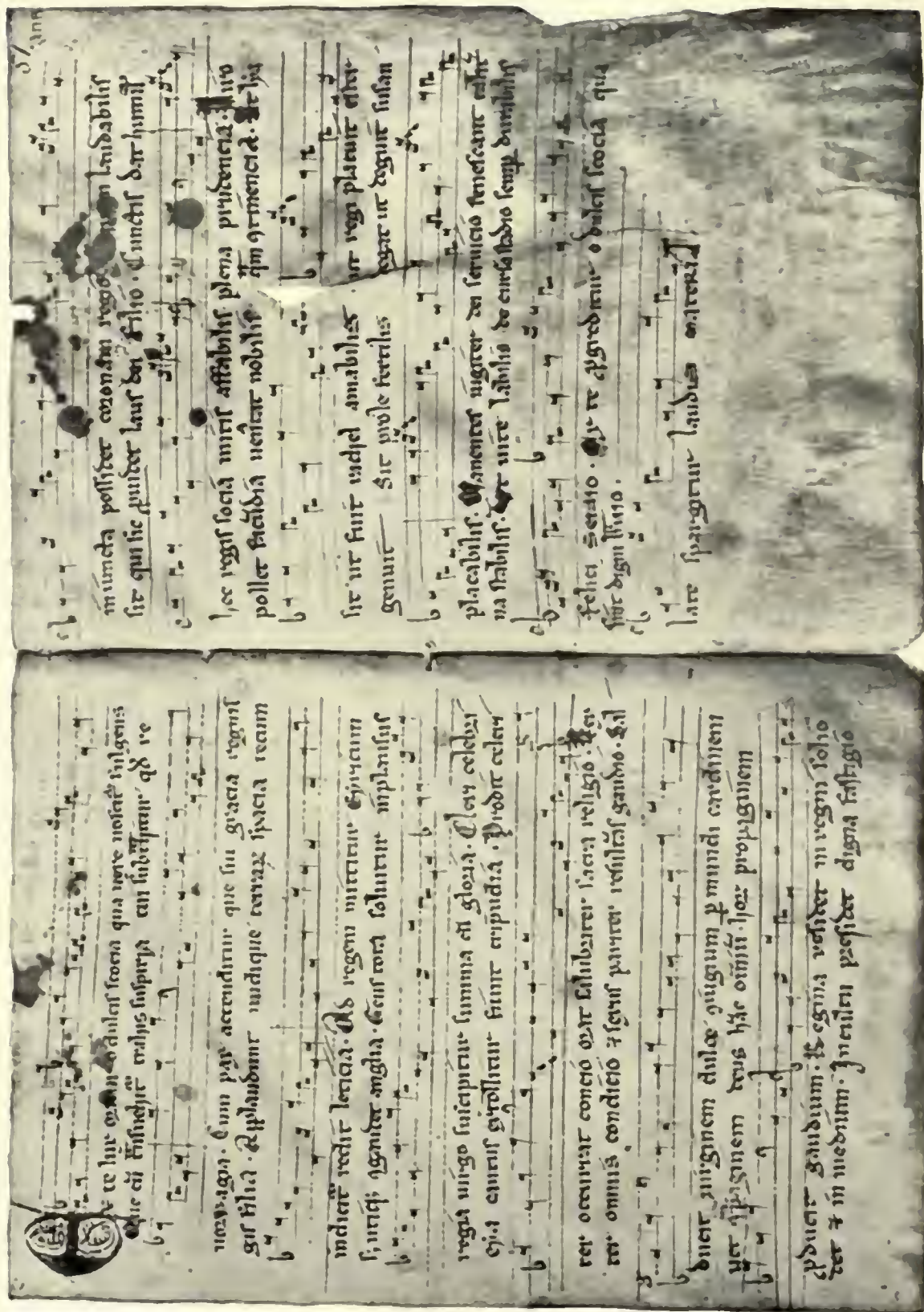
Like Rachel, may she ever keep her husband's love;
 Like Esther, with the King most high in favour prove;
 Like Leah, may she be with numerous offspring blest;
 And like Susanna, steadfast nye in virtue rest.

Long may they serve the Lord, united hand and heart,
 Alike in youth and age—nor even in death apart!
 And when the goal is reached of this their earthly race,
 May they receive at last the crown of heavenly grace!

From thee, O fairest Scotland, riseth evermore
 Subject for praise and glory to earth's furthest shore.

E. B.

Towards the end the epithalamium expresses the hope of a long and happy life for the King and Queen. But the young Queen Margaret did not live long. In 1282 she gave birth to a daughter, also called Margaret. On the 5th of February 1283/4 King Alexander III. assembled the Estates of Scotland and the infant Princess Margaret was acknowledged by the magnates as heiress of Scotland, the Hebrides, Tynedale, Penrith, and the Isle of Man. And when Alexander himself died in 1285/6, Margaret, then aged three years, became Queen of Scotland. Six guardians were meantime appointed, and a treaty of marriage between the child Queen of Scots and Edward, eldest son of Edward I. of England, was concluded in 1289. One may speculate on the destinies of Norway, Scotland, and England if that proposed marriage had been consummated! But alas! the young Queen of Scotland died in Orkney in 1290 on her way from Bergen to her Scottish kingdom. She was but eight years old at her death. The remains were taken back to Bergen to be buried in Christ Church, where her mother had been married and buried. For King Eric's queen had died in Tönsberg on the 9th of April 1283, and her body had been brought to Bergen for interment. After the death of the child Queen Margaret, King Eric made a claim to the Scottish crown as heir after his daughter. The claim was rejected, and in 1292 John Balliol became King in Scotland. King Eric, however, wanted to keep up connection with our country, and in 1293 he married Isabella, sister of Robert Bruce who became the next King of Scotland. Only one daughter was born to King Eric and Queen Isabella. She was called Ingebjørg and was in 1312 married to Duke Valdemar of Sweden. King Eric died in 1299 and was succeeded by his brother Haakon. Queen Isabella outlived her husband by nearly 60 years. She continued to live in Norway, chiefly in Bergen; but she kept in touch with her brother Robert Bruce; and the royal family in Norway always took her into their counsels. Most of her interests related to the Church on which she bestowed many rich gifts. She lived to be nearly 80 and died in 1358.



munda possidet coronam regis. **Q**uoniam laudabilis
 sit qui hic puer laus dei filio. Cunctis dat humil
 lare regis socia miris affabilis plena prudentia. **Q**uoniam
 pollet facidia ueniat nobilis. **Q**uoniam armencia. Et ha
 sit ut fuit uisibilis amabilis. **Q**uoniam regis placuit ether
 genuit. **S**ic uisibile fecit. **Q**uoniam regis ut deguit fusa
 placabilis. **Q**uoniam uigret dei seruis tenescant. **Q**uoniam
 na stabilis. **Q**uoniam uice labilis de curia studio semp durabilis
 felici seruis. **Q**uoniam re pignetur. **Q**uoniam socia qua
 sit digni filio.
 late spargitur laudis carmina.

re huc. **Q**uoniam dulcis socia qua uice ueniat. **Q**uoniam
 die cu fustidit. **Q**uoniam uisibile. **Q**uoniam
 uenit. **Q**uoniam puer accenditur. **Q**uoniam sua gratia regis
 sis filia. **Q**uoniam aplaudunt. **Q**uoniam uenit. **Q**uoniam
 indierit. **Q**uoniam leticia. **Q**uoniam uenit. **Q**uoniam
 si. **Q**uoniam uenit. **Q**uoniam uenit. **Q**uoniam
 regia uirgo suscipitur. **Q**uoniam ad gloria. **Q**uoniam
 oia eurus exultat. **Q**uoniam sunt erupidia. **Q**uoniam
 rer occurrat. **Q**uoniam concio. **Q**uoniam salubriter. **Q**uoniam religio. **Q**uoniam
 ter omnia condicio. **Q**uoniam seris pariter. **Q**uoniam uenit. **Q**uoniam
 ducit. **Q**uoniam dulcis. **Q**uoniam uenit. **Q**uoniam
 ut. **Q**uoniam uenit. **Q**uoniam uenit. **Q**uoniam
 pducit. **Q**uoniam uenit. **Q**uoniam uenit. **Q**uoniam
 ter. **Q**uoniam uenit. **Q**uoniam uenit. **Q**uoniam

Old Norse Latin Song: Margaret-Eric Epithalamium from Codex Upsalensis 233. Reproduced with the permission of the Secretary to Det Norske Videnskaps-Akademi i Oslo, Norway.

humilis magne marie abis uilis
celicus bono spiritū mīto tenere

Old Norse Latin Hymn to St Magnus from *Codex Upsalensis* 1937. Reproduced with the permission of the Secretary to Det Norske Videnskaps-Akademi i Oslo, Norway.

[illegible]

(1) No-bi-lis ho-mi-nis Ma-gus mar-tir sta-bi-lis
(2) Pre-di-cao ve-li-tas de-us con-sti-epi-ri-tus

(3) In-bi-lis o-m-nis co-mu-ni-o-re-bi-lis
et te-tu-las-de-bi-lis, in-om-ni-bi-lis

(4) et te-tu-las-de-bi-lis, in-om-ni-bi-lis
car-nis in-ter-re-cha-don-pa-tris

(5) No-bi-lis re-gi-a ti-bi-om-ni-bi-lis
(6) tra-di-tur, sub-di-tur, co-sta-co-sta-lan-gi-tur;
et-er-na-re, in-ter-re, in-a-ale-bi-sub-do-ro

(7) non cre-ter il-lu-di-ter ale-do-con-ul-o
te-re-pil-et-ter-re-cha-bi-epi-cu-lo,

(8) re-bus non com-mu-ni-ter la-da-con-di-o
tra-cto-frac-tu-fe-do-ro pa-tris o-m-ni-bi-lis

The St Magnus Hymn.

THE MUSIC FOR THE EPITHALAMIUM.

The music resembles the old French folk songs arranged in sequence. Every strophe, with few exceptions, has its independent melody and two parallel melodic links. The tone is the first church mode transposed to G. The melody formation is quite regular, with smoothly progressing intervals, and a characteristic effect is produced by frequent triplets. Towards the end the melody culminates with such rare figures in those days as double triplets and groups of five short notes.

This melody does not appear in any folk tunes, or in any sequence that followed the Gradual of the Roman Mass, that were known to the discoverer of the hymn and its music.

THE AUTHOR OF THE HYMN.

The name of the author is not recorded, but we can guess it. In the Norse embassy that went to Scotland in 1280 there was a Friar Maurice from the Minorite Convent in Bergen. He was certainly not a Norwegian by birth: indeed, very probably he was a Scot. As early as 1264 he and another Minorite were on a mission to Scotland from King Magnus. And from 1271 to 1273 he was one of a company of Norwegians on a crusade to Jerusalem. Some fragments, dating from about 1300, of an account which he wrote of the journey were found in the Norwegian archives in 1846. Maurice was thus an old servant of the Norwegian Court, a travelled man with literary gifts and interests; and he went to Scotland to bring the Princess Margaret to Norway for the marriage at which the song was sung.

It is well known that Eric's father, King Magnus, favoured the Minorites. When his queen had given birth to a son, the infant, according to legend, was more like a bear than a boy. When the royal father heard this he gave command that the baby should be wrapped in a fair cloth and laid during High Mass on the altar of the Minorite Convent at Bergen. At the end of the service they found a beautiful baby boy lying gurgling in the bundle. This legend at least shows how highly King Magnus had regarded the Franciscan Order. This story was told to the Scots by those who went as wooers on behalf of the young Norwegian king; and they added that Eric had grown up to be a gallant and goodly youth.

It was a Minorite monk who had been confessor to Margaret's own mother, and so the Minorites were highly esteemed at that time in Scotland as well as in Norway. It may therefore have been comparatively easy for Maurice, if himself Scottish, to succeed when he pled the cause of Eric at the Scottish Court. He was evidently proud of the honour the King had shown him in sending him on such an important errand; and, if he had the will, he also had the learning and the skill to write a

poem or song for the wedding. If the author of the poem was a Scot, as we can believe Friar Maurice to have been, then it is easy to understand how he refers to his own homeland in the song. Possibly Friar Maurice had first been a monk in a Minorite foundation in the Orkneys and had entered the service of the Norwegian King Haakon when he led the expedition which ended disastrously at Largs in 1263. All we can confidently say is that the author of the epithalamium was a man in Norway, a monk or priest, who could write Latin and was familiar with Church music.

HYMN IN HONOUR OF ST MAGNUS.

Magnus Erlendson was the grandson of the great Thorfinn, Earl of Orkney, which in the eleventh century was a province of Norway. Thorfinn defeated King Duncan and the *Orkneyinga Saga* boasts that he won nine earldoms in Scotland and all the Hebrides. Having had enough of fighting, he made his peace with God and ruled wisely till his death. His two sons, Paul and Erlend, succeeded him and ruled the earldom together, and when they died their sons Haakon and Magnus succeeded them. Magnus was born in Orkney about 1075. According to the sagas he was a docile and obedient boy, pliant and attentive to his father, Erlend, and to his mother and masters, and he was kind and pleasant to all. That is the only reference to the youth of him who was to be a Norse and Scottish Earl and famous for his godly character and deeds. In 1098 we learn of him being in the train of Magnus Barelegs, the Norse King, on a viking excursion in Scotland. The lad was a favourite and persuaded the king to refrain from attacking Iona; but later on he fell into disfavour because when they came to Anglesey he refused to join in the attack on a peaceful island that had given no provocation. Rather than fight, he jumped overboard and swam ashore. He made his way to his kinsman, King Edgar, in Scotland, where he remained for five years in the congenial company of that pious and worthy ruler. There too he wooed Ingarth, a maiden of high birth, like-minded with himself. He married her and they lived together till his death; yet the marriage was never consummated. It seemed that both bride and bridegroom had made a vow that they would live together as brother and sister. The sagas say that it was often a hard struggle for Magnus to keep the vow to which they had bound themselves.

We next find Magnus in Orkney, this time joint Earl with his cousin Haakon. They eventually divided the earldom between them, but even so they did not get on well together; their characters and dispositions were so different. Magnus was peaceable and friendly and contented with his portion of the earldom, whilst Haakon was harsh, overbearing, ambitious, and anxious to be sole ruler in Orkney. And at last, in 1115,

their friends arranged that there should be a meeting at Egilsay to arrive at an amicable understanding. Magnus arrived with two ships as arranged, quite unsuspecting of evil, but Haakon came with eight ships fully manned and armed. The friends of Magnus besought him to seek a place of safety; but he was pursued, brought back and murdered, signing himself with the cross as he received the death-stroke from an axe wielded reluctantly by one of Haakon's officers. Even Christian burial was refused to the dead Earl. But Haakon's aunt Thora, the mother of Magnus, made such a touching appeal to her nephew that he gave way, and Magnus was hurried in the church of Birsay. Haakon himself seems at last to have realised the enormity of his guilt, for he went on a pilgrimage to Rome and Jerusalem. And he came home again to rule well in Orkney until his death seven years after the murder.

It was on the 16th of April 1115 that Magnus fell. Twenty years later he was enshrined by Bishop Villjalm in Birsay, and thereby his cult was established. Shortly afterwards the shrine was removed to the Olaf Church at Kirkwall, and then to the new Cathedral there which bears his name.

The newly found Magnus hymn is akin in many respects to the other Latin Magnus hymns, in all of which emphasis is laid on Magnus's ascetically pure marital life.

The Magnus liturgical texts were included in the Aberdeen Breviary, probably after 1472, when the Orkneys came under the supervision of the Metropolitan of St Andrews; and of course the local patron saint of the newly added See was introduced into the Scots Church Calendar. Magnus was Earl of Caithness as well as of Orkney, and it is possible that he may have been worshipped in Caithness even before 1472; but his cult can scarcely have gone farther south at that period. In Norway no Latin Magnus hymns were in use, but the two Magnus Mass-days—the 16th of April, the day of his martyrdom, and the 13th of December, the day of his translation—were both observed.

This new Magnus hymn was not sung at the ordinary services in the See as were the four Magnus hymns in the Aberdeen Breviary. The last two verses of the hymn indicate that it was composed for singing by a monastic *familia* or community, e.g. at one of the canonical services, such as Lauds (Matins). The music was translated from the ancient notation (Pl. LXXXIV) into the modern (Pl. LXXXVI). The Latin verses have been freely rendered thus:

HYMN TO SAINT MAGNUS.

1. Most noble Earl Magnus, a martyr most meek,
Most constant and able, most ready to serve,
High honoured Protector, most worthy of praise,
We pray thee thy frail burdened servants to save.

2. Divinely endowed by the Spirit above,
And carefully shunning the sins of the flesh,
Subduing the passions of dissolute life,
The rule of the Spirit controlled thy desires.
3. Thy spouse a royal virgin was brought unto thee
And in holy nuptials was chaste joined with chaste,
And thus for the space of ten years they remained;
The bush, though on fire, was thus never consumed!
4. Thy crafty foe, Harkon, with envy aflame,
With fire thy domains for himself did lay waste,
And sought to destroy thee with sharp-edged guile,
And with kiss of peace a false treaty to seal.
5. Enduring dire woes for the cause of the right,
Betrayed, thou wert seized, and a blow laid thee low,
And death thee transported to heavenly heights,
And with martyred hosts thee united with Christ.
6. This glory we sing, and by miracles wrought,
The Lord Christ is blessed, and the Church dath rejoice,
And praise high ascendeth with thee as its theme;
How blessed Orcadia from henceforth appears!
7. Grace, pardon, and glory from heaven do we seek,
Who ask for the help of thy praises and prayers.
O Father, bestow us an answer, we pray,
And save this *familia* from judgment. Amen.

W. M. P.

THE ORIGIN OF THE HYMN.

From the wording of the hymn there is nothing directly to indicate that it was written in a monastery. We find reference to the saint's long years of virgin wedlock in the other Magnus hymns, but it is perhaps more strongly emphasised in the Upsala hymn than elsewhere (*vide* strophe two); and it is not only here that Magnus is praised as *humilis*, for in the ecclesiastical antiphone literature we find him spoken of as *justus*, *pius* et *modestus*.

The Magnus hymn appears in a codex that was written in a Minorite convent; and its author may well have been a Minorite. In any case it was probably written in a friary of that Order in the Orkney Isles, for nowhere outside the Orkneys would the Minorites have any interest in a local Orcadian saint. The Minorite Order came into being in the thirteenth century and, according to the Upsala Codex C233, such a foundation must have existed in Orkney in 1274.

The hymn cannot have been of Norse origin, for it had mainly a local interest, and there was no room for it in the Magnus cult in Norway.

But there is internal evidence, from the mode of writing, that it originated in a Norse-speaking land, such as Orkney was. We may therefore confidently conclude that Codex C233 and its contents were written in a Minorite convent in the Orkneys *circa* 1270-1280.

Codex C233 was in the library of the Bergen Bishop, Arne Sigurdson. As a Canon of Bergen he was a member of the embassy sent to Scotland in 1292 to negotiate with the Scots, on behalf of King Eric, regarding the dowry of the late Queen Margaret. The embassy sailed to Scotland via Orkney, and Arne probably got some books from the Minorite monks there. At his death the library was disposed of. From the Minorite convent of Bergen its wanderings can be traced to Greifswald, in Germany, where it was sold by Nicolaus Nettekén to Canutus Johannis, a Swedish Franciscan Friar, who had a long and brilliant career in many lands. Eventually he presented his fine collection of valuable books to the convent of the Friars Minor at Riddarholm, in Sweden. When that foundation was secularised in the sixteenth century its book collection remained as a Royal Library, and was augmented especially by King John III. In 1620 Gustavus Adolphus presented the library to the University of Upsala, and it became the nucleus of that University's present magnificent library. And among the twenty-one parchments from the Middle Ages Codex C233 holds a very honourable place.

THE MELODY OF THE MAGNUS HYMN.

This recently discovered MS. from the thirteenth century gives us a striking example of a two-voice setting of an ode or hymn on a Scottish subject. It is of special interest because parchments from that period with music for more voices than one are very rare indeed, and we know of none with any hint of harmony. One important feature of the melody is that it contains music in thirds when the third was still considered no true consonance. Thus the tune anticipates later methods of harmonising.

There is also another divergence from Middle Age theory. In the twelfth century the rule was that when the leading voice rose the accompanying voice must fall, and *vice versa*. There was thus a frequently occurring voice-crossing in the songs of that period. In the Magnus hymn, however, there is no such crossing. The upper voice provided the descant on the actual melody carried by the lower voice. The early Scottish practice always gave the tune to the tenor, the lower part with the other voices providing a sort of descant. The laws of strict theory for part-singing were thus, in some essential points, departed from. Consequently in this Magnus hymn we have a popular harmonising and not a setting made by a specially expert monk. We have really, as concerns two-voice compositions, just an early form of harmonising, with chords moving in sixths.

About the year 1200 Giraldus Cambrensis describes the characteristic method of singing in Wales, whereby part-songs were sung with as many parts as there were singers. He also reports that the Northumbrians made use of a similar harmonic singing, yet with only two voices, the lower humming, the upper singing the words. In these two regions no music was rendered alone, but either with several voices as in Wales or with at least two as in Northumbria. "Even the boys, which is more surprising, and, generally, children when they cry, do so in the same singing way." The Northumbrians had apparently adopted this manner of singing—as they did their similarity of speech—from the Norsemen, who made so many raids there and remained for long periods.

Giraldus does not tell us what was the nature of the North English music for two or more voices, nor is there any information on the subject to be got elsewhere, so far as we are aware. There is a possibility that that part-singing had some similarity to the two-part *organum purum* mentioned by Walter Odington, which, he says, was in use from very ancient times. According to him this consisted in a melismatic rich accompanying voice and a deeper *cantus firmus*. Most probably, however, the two-part singing in North England was not of the same kind as Odington's *organum purum*. We come to this conclusion especially because of the account Giraldus gives of the widespread and common use, even from childhood, of the two-part singing which seems to presuppose a very simple kind of harmony, particularly in parallel intervals, note for note; whilst *organum purum*, according to Odington's description and the example given by him, demands considerable harmonic insight and singing skill.

Our conclusion is that this St Magnus hymn is an example of the two-voice method of singing characteristic of Northern England and adopted by them from the Norwegians.

In the first place, it must be emphasised that the hymn in Codex Upsalensis C233 originally came from the Orkneys, which at the end of the thirteenth century belonged to Norway, and that it was in all probability composed there. If the two-part singing adopted from the Norse was so general in Northumberland and Yorkshire as Giraldus indicates, then it must be assumed with still greater probability that the Orkadians had inherited their skill in such singing and preserved it faithfully. It must be remembered that the Orkadians were mostly Norwegian immigrants, that the Islands from the ninth century onward belonged to Norway, and that the Bishopric of the Orkneys from the beginning of the twelfth century was under the supremacy of the Norse Archbishop of Nidaros (Trondheim).

In the next place, the method of singing referred to by Giraldus must have been of a very special type, a peculiar quality of singing. The

harmonic links evidently had not been of the type generally employed according to the Huchbaldian organum's primitive part-song theory, therefore not unisons, parallel fifths, fourths, or octaves. Otherwise there was nothing noteworthy in North England's two-part singing. Since doubtless—as previously indicated—they had to do with parallel intervals, they must specially have employed thirds as the easiest interval. Perhaps this is the explanation of the fact that it is in an English document that the third for the first time is treated as a consonant interval. Attention may here be called to *The Musical Notation of the Middle Ages* (London, 1890). There an example is given of a two-voice rendering from an English MS., dating from the beginning of the fourteenth century, which contains frequent thirds, through counter-movement.

Special emphasis must be laid on one point, which particularly argues for the Norse origin of the two-part Magnus hymn, viz. the unmistakable Lydian character of the melody. The tone is the sixth church mode, the Hypolydian (finalis F, dominant A). In this hymn we find repeatedly the tritone characteristic of the Lydian mode (the augmented fourth) arising both by direct movement and by two major thirds following each other. The composer of the melody seems to have had a conscious pleasure in applying the hard ringing tritone which Middle Age theorists avoided and which they even called "the devil in music."

In his treatise "Studies in Icelandic Music" (*Aarbøger for Nordisk Oldkyndighed og Historie*, 1899, Copenhagen, pp. 273 ff.), Angul Hammerich emphasises the Lydian mode as specially Icelandic, but lets it stand if here we have to do with an original Icelandic (or Norse) scale. On the other hand, Catharinus Elling, in "Vore Folkemelodier" (*Christiania Videnskapsselskaps Skrifter II, Hist.-Phil. Klasse*, 1909, No. 5), maintains that the Lydian scale is original to and characteristic of Norwegian folk music, and that the Icelanders have brought this Lydian stamp with them from Norway, their mother-land.

In England at that period the tritone seems to have been employed with much caution. In any case the samples contained in *The Musical Notation of the Middle Ages* are few, and only of an indirect tritone. And in Walter Odington's dissertation, *De speculatione musice*, the few samples of music afford rare cases of indirect tritone and not a single direct tritone interval. Nor is there any such in the Irish, English, and Scottish folk melodies we are acquainted with.

Not least, then, on account of the frequent occurrence of the Lydian mode in Norse folk music and the fondness for the abrupt tritone melody, it may be accepted that the melody of the Magnus hymn is Orcadian and Norwegian. The two-voice setting of the melody, with its parallel thirds, was characteristic of the contemporary Norse two-part music. And so, because of its primitive features, the Magnus hymn and its harmonising

must be deemed to be considerably older than the end of the thirteenth century, a period when, in the leading European lands, the art of part-singing was well advanced.

Scotland should be grateful indeed to Professor Kolsrud for the recovery of these two long-lost hymns and for the very interesting account of his find.

ADDENDUM.

Copies of the original account¹ of the discovery of Codex Upsalensis C233, entitled *Tro Norröne Latinske Kræde Med Melodiar*, were presented by Professor Kolsrud to the National Library of Scotland and to the Library of H.M. Register House, Edinburgh.

A brief reference to the Margaret-Eric epithalamium appeared in an article on "Three Margarets" in the *Scots Magazine*, vol. i. p. 344; and in Mr John Mooney's *St Magnus, Earl of Orkney*, published in Kirkwall in 1935, mention is made of the recovered St Magnus hymn (pp. 290-2).

Thanks are due to Professor Kolsrud and Det Norske Videnskabs-Akademi, Oslo, for supplying us with the clichés for printing the plates of the ancient parchments; to Miss E. Beveridge, M.A., and to Mr W. M. Page, S.S.C., for rendering the Latin words of the songs into English verse; and to Mr Wm. Taylor and Lieutenant Knight, Royal Scots Fusiliers, for singing the songs in their original musical setting, rendered for the first time in public in Scotland for half a millennium.

Our personal thanks are due to Sir Walford Davies, Mus.Doc., Master of the King's Music, Windsor, and to Mr Harry M. Willsher, University College, Dundee, for helpful notes on the music of the songs.

¹ The Codex was discovered in Upsala in 1911 by Oluf Kolsrud, then an Oslo student with a travelling scholarship. He read an account of the songs to the Norwegian Academy of Science in the following year, and it was published by the Academy in 1913, in Norwegian, with a résumé in French. In German Guido Adler's *Handbuch der Musikgeschichte* in 1934 referred to the finding of the Codex and gave the first verse of the St Magnus Hymn, words and music, p.136.

MONDAY, 8th May 1939.

PROFESSOR THOMAS H. BRYCE, M.A., LL.D., Vice-President,
in the Chair.

A Ballot having been taken, the following were elected Fellows: Alexander Robertson-Collie; Iain Malcolm MacCrimmon MacLean; Captain W. G. D. Cheyne-MacPherson, M.C.; Rev. W. Eason Robinson, B.A., L.Th.

Donations to the Museum and Library, as per lists at end of volume, were intimated and thanks voted to the Donors.

The following Communications were read:—

I.

CULTIVATION TERRACES IN SOUTH-EASTERN SCOTLAND.

By A. GRAHAM, M.A., F.S.A.Scot., F.S.A.

I. INTRODUCTORY.

The terraced hillsides of the eastern Lowlands have already formed the subject of four papers presented to this Society in the past,¹ but there are at least two good reasons for reopening the subject. In the first place, the current theory regarding the origin and date of similar remains in England² has recently become the subject of renewed controversy;³ while, in the second place, the *Proceedings* papers just quoted, having been limited to the discussion of comparatively few examples, have prompted certain generalizations⁴ which now, in the light of further data, no longer appear tenable. Actually the papers in question mention no more than twenty terrace-groups in Scotland and a further three in a neighbouring district of Northumberland; other publications⁵ give notes of a small additional number, but the total amount of material thus made available for study is still meagre. I have therefore thought it worth while to consider the facts afresh, having first prepared as complete a list as possible of the terrace-groups and other analogous remains in the area dealt with.⁶ And here I desire to express my thanks to the Royal Commission on Ancient and Historical Monuments for having allowed me to include in this study some unpublished material collected by myself and its other officers in the course of our official duties. As a result of this permission I have been able to include in my list no less than a hundred and thirty-six sites; the great bulk of these I have walked over and examined myself, while all but a few of the remainder I have observed carefully with glasses from a suitable view-point.⁷ I also wish to thank my colleagues on the Commission's staff for the valuable observations and suggestions that they have kindly put at my disposal, as well as numerous other friends who have helped me in one way or another.

¹ P.S.A.S., i. pp. 127-33; lxii. pp. 107-20; lxx. pp. 388-98; lxxvii. pp. 72-81.

² Seebohm, *English Village Community*, pp. 5 f.; Crawford, *Air Survey and Archaeology*, pp. 8-10; Congress of Archaeological Societies, *Report of the Thirty-ninth Congress and of the Research Committee for the Year 1931* (1932), pp. 30 ff.; *Antiquity*, i. pp. 273-81; iii. pp. 165 ff.; vi. pp. 380 ff.

³ C. S. and O. S. Orwin, *The Open Fields*, pp. 319 ff., and *Antiquity*, xiii. pp. 45 ff.

⁴ E.g. some of those summarized in *Antiquity*, vi. pp. 402-4.

⁵ Gordon, *Itinerarium Septentrionale* (1720), pp. 11, 114 f.; Small, *Interesting Roman Antiquities recently discovered in Fife* (1823), p. 187; Wilson, *Prehistoric Annals of Scotland* (1803), i. pp. 401-2; *Proceedings of the Berwickshire Naturalists' Club*, viii. (1876-8), p. 421; *ibid.*, xl. (1885-6), p. 26; *ibid.*, xlv. (1892-3), p. 12; *Scottish Geographical Magazine*, xxxv. p. 303.

⁶ The limits of this area are given on pp. 301-3 below and are shown on the map (fig. 2).

⁷ Some practice is often required for the proper identification of terraces, as their appearance varies greatly according to the strength and direction of the light and the state of the vegetation.

II. LITERARY EVIDENCE.

By way of clearing the ground before proceeding to consider actual observations, it will be well to glance at such literary sources as might be expected to contribute something to the inquiry. The most recent of the relevant works are probably the volumes of the series of *General Views* of the agriculture of the various counties, prepared for the Board of Agriculture at the end of the eighteenth century. These books provide us with a fairly adequate idea of the agricultural practice of the time, including the working of the runrig system of tenure; and it is safe to say that there is nothing—*e.g.* in the description of that system which occurs in the Aberdeenshire volume¹—to suggest that the use of terraces as such necessarily entered into it in any way at all. Indeed, it is clear from Gray's whole account of the early agricultural systems² that the use of terraces is quite unlikely to have been an intrinsic feature of any one of them; although terraces may well have been built, or have been allowed to form, or have been used if already in existence, as a matter of convenience under any administrative system. The complete silence of the Roxburghshire volume on the subject of terraces is particularly significant in view of the large numbers of terraces that are now to be seen in that county. It is also clear from the *General Views* that S-shaped rigs, which in some cases at least appear to be definitely later than terraces occurring in the same areas,³ were themselves passing out of use at the time when the series was being prepared.

The *Statistical Account of Scotland*, which dates about twenty years earlier than the *General Views* series, is again remarkable for its silence on the subject of terraces. No mention is made of them in the accounts of the parishes of Hownam, Morebattle, Oxnam, Yetholm, Innerleithen, Peebles, Newlands, Culter, or Dunsyre, which contain between them most of the really striking examples; while the author of the account of Markinch parish evidently had no real knowledge of the origin or purpose of the group to which he alludes.⁴ A very small scrap of evidence may be found in the statement⁵ that several farms in the higher part of Hownam parish had "scarcely been ploughed in the memory of man," for this suggests that a region in which terraces are particularly common had gone out of cultivation at least as early as the beginning of the eighteenth century and that the terraces may consequently reflect an agricultural system that was in use before 1700. Similarly, the writer of the account of the adjoining parish of Morebattle argued, from "traces of the plough" which could be seen in his day on the higher ground, that "much more of this

¹ Anderson, *General View of the Agriculture of the County of Aberdeen* (1794), pp. 54 ff., quoted by Gray, *English Field Systems*, pp. 158-61.

² *English Field Systems*, *passim*.

³ See *infra*, p. 304.

⁴ *Stat. Acct.*, xii, p. 551.

⁵ *Ibid.*, i, p. 40.

and the adjacent country was anciently under tillage than at present."¹ It is tempting to connect the abandonment of these lands with the great English raids of the middle of the sixteenth century,² and to conclude that terraces were in use in the later Middle Ages; but this construction cannot be put on the evidence, as terraces similar to the Hownam and Morebattle groups can equally be found in adjoining valleys on the English side of the Border. Pennant, writing of a tour made in 1772,³ was evidently unfamiliar with terraces, while Gordon, writing in 1726, or more than two generations before the *Statistical Account* was compiled, failed to discover any local tradition of the use of the Romano group.⁴ Earlier again than Gordon's work are the illustrations of Sleszer's *Theatrum Scotia*—this book was published in 1693, but some or all of the drawings were made about twenty years earlier. Sleszer frequently incorporates views of ploughed fields and of standing crops, and it is clear that the system of agriculture with which he was familiar made use of ordinary rigs, well piled up in their centres and laid out for the most part across the lines of the contours. His scenery suggests just such farming methods as are described in the *General Views* series; only four of his pictures⁵ show fields laid out in lines running parallel to the contours, and even in these cases it cannot be said that he intended to depict terraces rather than horizontal rigs. For an earlier period than the late seventeenth century I have only been able to find Small's record of the finding of what seem to have been incinerated burials on the vanished terraces of the Wester Pitlour group.⁶ On the face of it this find would seem to put the group in question back to pre-Christian times, but the record is not reliable enough to form a basis for argument. Finally, Chambers's statement that "by the country-people, these terraces are called 'denses,' from their resemblance to grassy seats,"⁷ suggests that, in Peeblesshire, all memory of their real purpose had completely died out by the middle of the nineteenth century.

The foregoing facts thus make it difficult to believe that terraces were being at all commonly used, and still less that they were being constructed, at as late a date as, say, 1700; and it will therefore be safe to conclude that their general supersession in favour of oblique or vertical rigs was not a result or concomitant of the process of "improvement" which set in in the earlier part of the eighteenth century. Moreover, as at least a century should no doubt be allowed for the fading of what must have been a well-established folk-memory, we can hardly suppose that the Romano terraces,

¹ *Ibid.*, xvi, p. 500.

² *Proc. Ber. Nat. Club*, x. (1882-4), p. 10, records a tradition that Kale Water was nearly depopulated as a result of the raid of 1545.

³ *A Tour in Scotland*, part II., p. 281.

⁴ *Op. cit.*, p. 114. The allusion to the Picts cannot be supposed to be founded on real folk-memory. However, neither his uncritical acceptance of what he was told nor his doubtful reliability as a field observer invalidate the deduction that the Romano terraces were no longer understood in his time.

⁵ Nos. 32, 39, 40, 43.

⁶ *Op. cit.*, p. 188.

⁷ *History of Peeblesshire*, p. 40.

at any rate, can have been under cultivation at any period of the seventeenth century. In other words, the literary evidence provides some grounds for believing that the terraces are probably not of later date than the late Middle Ages,¹ though of their possible upper limit in time it gives us no hint whatever.

III. PHYSICAL CHARACTERISTICS.

Except at the price of expanding this paper to intolerably large bulk, it would be quite impossible to give complete descriptions of all the groups of terraces and other traces of bygone cultivation on which I have recorded notes. In the present section, therefore, I will only attempt to summarize the principal facts, and to discuss such of them as seem to bear upon the origin and date of the remains. A complete list of the sites noted in Scotland, with their locations, will be found below in an Appendix.

1. *Summary Statement of Facts.*—It must be stated at once that the material does not exhibit such features as would form a basis for its differentiation into clearly defined types. In particular, the heights and breadths of the individual terraces do not afford a basis for the classification of the groups of which they form part, as these dimensions are apt to vary widely even within a single group. Such variations, in fact, are evidently conditioned by changes in the steepness of the slope and in the aspect of the ground. Again, if an attempt is made to define even the broadest of types on any given basis, individual examples are constantly found to fall between one such type and another, to the stultification of the scheme, whatever it may be. I have therefore confined myself to listing selected examples under headings that are designed to bring out certain features, in order to provide both a general idea of the nature of the various groups and also a basis for discussing their probable origin and date.²

A. *Step-like terraces* (Pl. LXXXVII, 1 and 2, and Pl. LXXXVIII, 3).—In some cases the terraces are remarkable for their bold step-like profile, as they have steep fronts³ which often attain to a considerable height while their upper surfaces⁴ are more or less flat. *Examples:* Tullymurdoch, Markinch, Dunsyre, Nisbet Water (upper), Mitchelhill, Romanno, Purvis Hill, Braemoor Knowe, Headshaw Law, Comitridge Knowe. The line between this variety and the next one is not at all easy to draw, as the former fades off into the latter in proportion as the fronts of the terraces decrease in height and their upper surfaces depart from the horizontal. Actually the distin-

¹ Watson's suggestion (*Celtic Place-Names of Scotland*, pp. 153 f.) that the Romanno and Arthur's Seat groups owe their origin to the canons of Holyrood is interesting, but no evidence can be produced either for or against it.

² As a result of this procedure, a group of terraces which exemplifies more than one noteworthy feature will naturally appear in more than a single list.

³ I.e. the surfaces corresponding with the "risers" of a flight of steps.

⁴ I.e. those corresponding with the "treads" of a flight of steps. These arbitrary terms are used throughout this paper for the sake of convenience.



1. Part of Purvel Hill group, showing step-like construction and trees growing in terrace fronts.



2. Part of Romano group, showing step-like construction.



3. Boulder reinforcement of a terrace front in the Buddingston group.



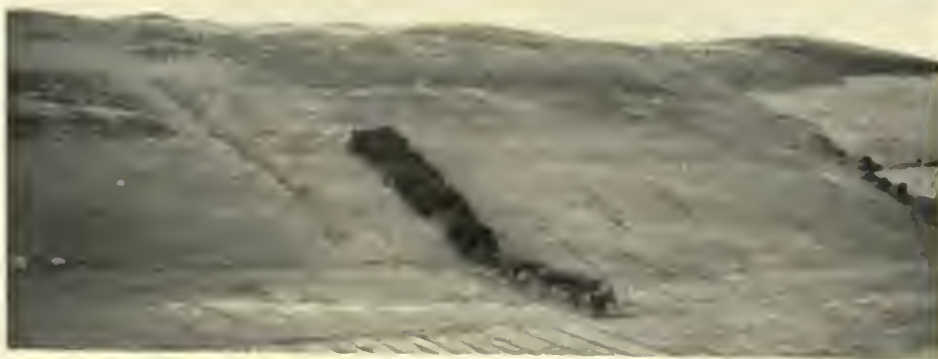
4. Part of Braemar Kuowo group, showing rills (in foreground) aligned with terraces (in middle distance).

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(Croen copyright reserved).

1. Chatto Craig group, showing terraces separated by strips of the natural hillside.



2. Culter Shaw group, showing terraces criss-crossed by later vertical rigs.



3. Romano group, showing step-like construction.

ANGUS GRAHAM.

PLATE LXXXVIII.

guishing feature of List B appears in parts of several of the foregoing groups.

B. *Terraces separated by strips of natural hillside* (Pl. LXXXVIII, 1).—In this, the largest, class, terraces do not rise above one another in the fashion of a flight of steps, but are separated by strips of the natural face of the hillside. The dimensions of their fronts and upper surfaces, as well as the breadths of the intervening strips of hillside, vary considerably; but the fronts of these terraces are, in general, a good deal lower than in the case of List A, few of them being more than 5 feet high. In some cases fronts measuring as little as 12 inches have been noted. *Examples*: Alva, Nisbet, Goseland Hill, Glentworth, Cademuir, Edston, Bowerhope, Catlee Burn, Hutton Mill, Kelso Hill, Chatto Craig, Calroust, Cock Law and Kingseat Burn. Ven Law and Stotfield Hill likewise fall into this class, but may be special cases (see p. 300). Many other probable examples have been seen at a distance only, but these cannot be distinguished with certainty from the horizontal marks that are given in List C.

C. *Horizontal marks*.—The hillsides flanking Bowmont Water and Kale Water, in Morebattle and Hownam parishes, are in many places heavily scored with horizontal marks. They can be seen so readily from the main valley roads that individual examples do not require to be named. These marks evidently represent terraces of the kind that are listed under B above, being either their imperfect beginnings or, much more probably, their last vestiges, almost destroyed by later cultivation. They have not been examined in detail for the purposes of this paper, as such marks generally appear most clearly when viewed from a considerable distance, and in fact may be quite invisible to an observer who actually walks across them. Even more elusive are crop-marks, of which a very good example was seen by Culter Mill Lead, and others, less definite, at Skirling, Kirkurd, and Romano.

D. *Oblique terraces*.—Reverting to tangible remains, I must next mention those terraces which lie, either in whole or in part, at a considerable angle to the horizon. *Examples* are to be seen at Dunsyre, where the terraces dip down across the contours in steep curves and then flatten out; at Cademuir, where the same thing happens but the dip is less pronounced; at Swineside, where both ends curve downwards to a low point in the centre; and at Inverkeithing, Woodhouse, Old Thornylee, and Buehtrig, where the terraces dip sharply but in straight, not in curving, lines. This effect may probably be due, at least in the last four cases, to an attempt to lay out strips for "vertical" ¹ cultivation on ground that slopes in more than a single plane.

E. *Oblique curving marks*.—Perhaps to be compared with the oblique

¹ This word is used loosely, here and elsewhere in this paper, to indicate rigs which are laid out across the contours, whether obliquely or at right angles.

curving terraces, which have just been mentioned, are the curved marks that can be seen, from across the Lyne valley, sweeping down and across the western face of Whiteside Hill. Similar marks can be seen on Dod Law and, under certain conditions of light, on the south-west side of Muirburn Hill. (These sites have not been included on the distribution map.)

F. *Terraces which bear rigs*.—It is by no means uncommon to find rigs, indistinguishable from those seen in any area of abandoned cultivation, running along such terraces as are broad enough to hold them or along the strips of hillside that occur between the terraces of List B. *Examples*: Middleton, Dumsyre, Nisbet, Culter Shaw, Logan Burn, Woodhouse, Old Thornylee, Countridge Knowe, Braemoor Knowe, Calroust. The number of rigs on each terrace naturally varies with the breadth of both terraces and rigs, but two or three rigs, each about 18 feet broad, are often present. An exceptionally broad terrace of the Calroust group bears a large number of these rigs, which curve downhill J-wise until their ends terminate at the face of another terrace which cuts obliquely across them.

G. *Terraces which merge into rigs*.—A rather surprising fact which this study has brought to light is that terraces and rigs in some cases actually merge into one another. *Examples* are to be seen at Logan Burn, where low terraces take the place, as the ground rises, of the rigs which lie parallel with them on the flatter area below, while these rigs in turn acquire the form of terraces at their upper ends; at Braemoor Knowe (Pl. LXXXVII, 4, and Pl. LXXXIX, 1), where rigs and step-like terraces occur in the same series and where a rig can often be seen becoming a terrace to conform with a change in the direction or steepness of the slope; at Dumsyre, where the terraces, on descending to the lower-lying ground, flatten and expand into broad rig-like strips, themselves subdivided into rigs; at Calroust, where some of the rigs almost assume the proportions of low subsidiary terraces; and at Tullymurdoch (Pl. LXXXIX, 2), where terraces occur on the lower and steeper slopes but rigs on the flatter ground above—the ends of these rigs, however, assuming the form of terraces where they curve round and end on the flank of a shallow gully.¹ In some of these cases it is quite impossible to decide whether a given irregularity in the ground should be called a terrace or a rig; for example, at Newton Bridge and at Kilbucko March normal rigs can be seen tending to acquire a terrace-like form in consequence of having been laid out obliquely to a slope.

H. *Terraces which show traces of masonry or of placed stones*.—I have chosen the foregoing words as a heading for this list in order to avoid prejudicing the question of "revetment," which will fall to be discussed shortly. True masonry revetment has only been found in a single case, which will be discussed below (p. 296). Eckford records that some of the

¹ The terrace-like ends of these rigs are paralleled at Heriot Siding, at Nisbet Water (lower), and at Elghope Burn, though in all these cases the rigs themselves have been destroyed by later cultivation.

Purvis Hill terraces were found, when dug into, to have "large stones in front,"¹ an expression which does not suggest true revetment. The Duddingston group (Pl. LXXXVII. 3) provides the best example of terraces with placed stones or boulders in their fronts, while the quantity of stones of all sizes to be seen at Old Thornylee is also very considerable. The Dunsapie group shows lines of earth-fast boulders marking the former positions of the fronts of terraces which have now been more or less completely removed. Stonework which was evidently not intended as revetment was seen at Girron and will be discussed later. A few odd stones were observed in terrace fronts at Woodhouse, Calroust, and Bowerhope, as well as a row at Kaim Burn; but in none of these cases was there definite evidence of building. I have failed to identify the example quoted by Christison² as having been observed by Geikie on Bowmont Water. The stone-revetted garden-beds at Neidpath Castle need not detain us, as they belong to the class of terraced gardens rather than to that of cultivation terraces; while the small terraced plots at Bloodylaws and on Elghope Burn, although they show no stonework, are no doubt in the same tradition.

J. Special and doubtful cases.—In this list I have included a number of examples which are either of doubtful authenticity or which seem, for one reason or another, to be irrelevant to the present study. The terraces at Inverkeithing, for example, may possibly have had some connection with the mediæval burgh, and, if anything more than ruinous revetments remains on the slope below Johnstone Terrace, Edinburgh,³ a similar explanation would probably apply there. Both cases should be regarded as special ones and treated with caution. Again, the "terracing" noted at Maiden Castle (Bracks)⁴ consists only of some irregular ledges and is in no way comparable with the rest of the material here dealt with; while that at Maiden Castle (Dunipace)⁵ is probably no more than a series of low narrow rigs. The supposed terraces at Primrose Hill⁶ are probably parts of the outer defences of the fort, as those recorded by Gordon at the Keir, Ardoch,⁷ are without question. The group reported on hearsay by Chambers,⁸ at Castle Semple, is probably to be identified with a series of high steep rigs which, as I am informed, still exist there; there are no traces of Chambers' group at Currie,⁹ nor of Gordon's groups at Denoon Castle¹⁰ or at Castle Hill Fort;¹¹ while the very narrow shelves on Kildownies Hill, though

¹ *P.S.A.S.*, lxii. p. 115.

² *Early Fortification in Scotland*, p. 373.

³ Cf. *Scottish Geographical Magazine*, xxxv. p. 303.

⁴ Royal Commission on Ancient and Historical Monuments, *Inventory of the Ancient Monuments of Fife*, No. 242.

⁵ *Ibid.*, No. 421.

⁶ *P.S.A.S.*, lxii. p. 120; Royal Commission on Ancient and Historical Monuments, *Inventory of the Ancient Monuments of Berwickshire*, fig. 63.

⁷ *Op. cit.*, pp. 41-2.

⁸ *P.S.A.S.*, i. p. 129.

⁹ *Caledonia*, ii. pp. 469-70. But he may have intended to indicate the Middleton group.

¹⁰ *Op. cit.*, p. 115.

¹¹ *Op. cit.*, p. 161.

regarded by Gordon¹ as terraces, are unquestionably natural features. I have not been able to verify Wilson's report of built terraces in Islay,² and therefore do no more than record it for the benefit of future inquirers. Finally, I must confess—with the greatest regret, in view of the care bestowed on their survey and description—that I cannot regard the so-called "Celtic lynchets" at Torwoodlee as being examples of cultivation terraces at all.³

Of the foregoing only the Inverkeithing group is included in the distribution map.

2. *Discussion of Physical Characteristics.*—The first point that calls for notice in the foregoing summary of the facts is the extent to which the terrace-groups differ in character among themselves. Nothing could be more dissimilar than the high steep terraces at Romanno on the one hand, and the very low ones at Kilbucko Church or Bowerhope on the other; while many other instances of wide diversities of type could easily be taken from the lists. In view of these differences, a question inevitably arises as to whether the body of material here assembled can properly be treated as a unit, or whether the name "terrace" is not, in fact, being stretched to cover a collection of remains the origins, purposes, and histories of which may be just as diverse as their physical types. No answer to this question can be offered at present, but the possibility of more than a single explanation being needed to account for all our material must nevertheless be borne in mind.

In the second place, something must be said about the problem of whether the terraces were originally designed and constructed as such before being put into use, or whether they came into being, as it were automatically, in the course of ploughing. Proof of the former of these alternatives would, of course, be afforded by regular masonry revetment, but this has been found in one case only,⁴ that of a solitary terrace on Fasset Hill which does not form part of a group, and no general conclusions should therefore be based upon it. Almost equally strong evidence is, however, forthcoming in the boulder-work seen at Duddingston (Pl. LXXXVII,

¹ *Op. cit.*, p. 115.

² *Prehistoric Annals of Scotland* (1863), I, pp. 491-2.

³ On these, see *P.S.A.S.*, lxvii, pp. 74 ff. But I prefer a reading of the site suggested to me by Mr C. E. Stevens, who regards all except the lowest bank as essentially natural features, though perhaps somewhat altered in shape by human agency—e.g. the topmost bank appears to represent the original outline of the fort, while those lying between the 725-ft. and 765-ft. contours (*loc. cit.*, fig. 3), below which there seems to have been an enclosure with a small house, may well have been quarried or cut back to a certain extent. The lowest bank, again, though doubtless formed as a lynchet, appears simply to mark the lower side of the enclosure, the E. and W. sides of which can also be seen clearly when the grass is short; it can therefore hardly be regarded as a cultivation terrace. Finally, the ground lying immediately S.W. of the supposed "Celtic lynchets" differs astonishingly from the photograph of it which figures on p. 76 of the *Proceedings* volume quoted; the long straight terraces there shown do not exist in fact, and their appearance in the photograph must be due to some accidental effect of light, in combination with certain conditions of vegetation or moisture or both.

⁴ Revetted terraces which are obviously structural in purpose, such as occur at Old Thornylee (*cf.* p. 308) and on several "homestead" sites, are not taken into account.

3) and Dunsapie.¹ This is not true revetment, as the boulders do not constitute an actual wall but seem to be embedded in the earth of the terrace fronts rather than to support it. Raistrick and Chapman make use of the convenient expression "reinforced turf bank" in describing a similar type of construction found by them in Wharfedale.² But it is clear enough that the steepest and highest, at least, of the Duddingston terraces must have been constructed as such before they were used, notwithstanding the fact that the Dunsapie group, which adjoins them, provides some evidence that may tell in a contrary sense.³ At Old Thornylee there are extensive remains of reinforced banks, and at Robertson, some less definite indications of the same kind, but no opinion can be formed about their origin on the strength of superficial observations alone.

Additional evidence of purposeful construction might also, perhaps, be looked for in the step-like profiles of the groups included in List A, but this would be unsafe in view of the dimensions of certain lynchets which have been proved to be the result of ploughing only.⁴ Nevertheless, it may be worth while to recall that terraces which to-day appear to be completely without revetment may originally have been supported by stakes or fascines which have long since rotted away, or again that the loose material of the terrace fronts may have been held together by the roots of trees growing in such positions as those which are now to be seen at Purvis Hill (Pl. LXXXVII, 1) or Stotfield Hill. Eekford remarked such differences between the soil excavated on the Ven Law terraces and that found on adjoining unterraced ground as convinced him that these terraces had been constructed artificially; at Dunsyre and Romanno he found some rather less definite evidence of the same character,⁵ while he believed that at Purvis Hill signs of excavation could be detected rather than of building up.⁶ It seems difficult to draw conclusions on points of this kind unless the presence or absence of an old turf-line below the "positive lynchets" is actually noted; I must, however, admit that this may be little better than a counsel of perfection as, in the case of a terrace that I sectioned for this very purpose, it was impossible to detect any dividing line between the very thin gravelly soil and the underlying till.

As against the foregoing evidence for purposeful construction, signs are by no means wanting in support of the ordinarily accepted view that the terraces—or some of them, at least—have been formed during use, by

¹ For description, see Royal Commission on Ancient and Historical Monuments, *Inventory of the Ancient Monuments of Midlothian*, No. 11. An air-photograph will appear in *Antiquity*, xiii, No. 51 (September 1930).

² *Antiquity*, iii, p. 173.

³ *Infra*, p. 298.

⁴ E.g. Thundersbarrow Hill (*Antiquaries Journal*, 3rd series, xiii, pp. 118 ff., and *Antiquity*, xiii, p. 48).

⁵ *P.S.A.S.*, lxii, pp. 111 f. The use of imported soil in terrace-building in Malta is suggested in *Antiquity*, ii, p. 23. Masonry terrace-walls, evidently intended to be filled with imported soil but abandoned before completion, may be seen near the village of La Sine, A.-M., France. There is but little natural soil in this locality, the unimproved land being extremely rocky.

⁶ *Ibid.*, p. 114.

gradual and fortuitous accumulation. This process would provide an easy explanation for the terraces which are divided from one another by strips of the natural hillside, and this explanation is, in fact, the one which leaps to the mind as one views the sites of List B. Moreover, a clear demonstration of its working can be seen on the site at Girron, included in List H above. The site in question is a low hummocky ridge, sloping in diverse directions in its different parts. It is traversed by rickles of stones, probably the remains of low dykes originally intended to divide its surface into strips, or possibly no more than elongated dumps of land-stones cleared from cultivated ground. Where the level of the surface is the same on both sides of these rickles, they lie quite free and their true nature is plain; but where they separate two strips lying one at a higher and the other at a lower level, they appear as stony steps with flattish surfaces of turf lying above and below them. In one or two cases a rickle can actually be seen disappearing under the turf, where the lie of the ground changes, and a better proof than this of the reality of automatic lynchet-formation could hardly be looked for. Consequently, in other cases where stones or boulders can be seen in positions which suggest that they may have marked the divisions between adjoining strips, we are justified in asking whether accumulation may not have occurred in the same way as at Girron.

An interesting case in point can be found in the Dunsapie group. In some of the terraces here the boulders occurring in the terrace fronts are so few and far between that their presence could be explained by assuming that they had been thrown to, or piled along, the edges of strips of land that were in process of being cleared for cultivation, while those which are actually fixed in the original surface of the ground might well have been intended to mark the divisions between adjoining strips. In some places, above the Queen's Drive, where terraces have been destroyed by later cultivation, rows of earth-fast boulders can be seen marking the former positions of the terrace fronts; and there can be no doubt that, if strips had originally been divided from one another in this way and the continuity of ploughing interrupted along such dividing lines, terraces would have formed through the gradual accumulation of soil washed down from the cultivated strip above. And this process would, no doubt, have been accelerated if large land-stones and other rubbish had been piled between and upon the boulders that marked the lines. The remains of boulders or stonework at Old Thornylee—to say nothing of those at Calronst, Robertson, and Woodhouse, which are on a much less considerable scale—suggest the same possibility; while the few stones appearing at Bowerhope, though negligible in point of numbers, occur in a lynchet so low (about 12 inches) that revetment can hardly be in question. We have thus some material evidence to support the idea that some, at least,

of the terraces may have come into existence through the automatic accumulation of rain-washed soil.

I believe that this conclusion can be drawn without prejudice to the question of whether, where, or for what purposes balks were left between the strips of an open field, which, as it is intimately bound up with the further question of the origin of the southern English lynchets, cannot be discussed within the limits of the present paper.¹ Whatever may be the proper answers to these questions—and it seems possible that they may not admit of being answered by general statements—we may note that at least one definite record exists² of uncultivated balks, such as we presume might give rise to lynchets, being left, in Scotland, between the cultivated strips of fields worked under the runrig system. Again, it is not unreasonable to suppose that where slopes were steep and soil thin, as in much of our area, farmers may have purposely promoted the formation of terraces by artificial means, in order to prevent loss of soil by denudation.³ And for this purpose a row of stones, such as those seen at Dunsapie, or even a less substantial obstacle to the passage of the plough, would certainly have been sufficient. In this case the distinction between terraces constructed as such before being used, and those formed automatically in the course of ploughing, loses a good deal of its meaning.

In the third place, something must be said about the signs of use observable on the terraces included in List F. It is easy, particularly in view of the narrowness or awkward situation of some of the better-known examples, to fall into the belief that all terraces are necessarily of early date and are to be connected with extremely primitive methods of tillage. However, List F provides ample evidence that many of the terraces were under the plough at a time when rigs were in use that cannot be distinguished from those of the "vertical" systems. It is natural enough to argue⁴ that the presence of these rigs indicates that the terraces in question date from the same time as the rigs—that is to say, presumably from the Middle Ages or later. It is necessary, however, to remember that the facts as we find them could be explained equally well by attributing the rigs to what the Orwins call⁵ the opportunism of farmers of a later period, who may have made use of ground that was already terraced and, in so doing, employed, as was natural, their ordinary technique of rigs. Other indications of the working-over of terraces by later users are to be found at Dunsyre, where some intermediate terraces have been removed wholesale with the apparent object of obtaining broader expanses of flat ground on the adjoining

¹ On this, see the Orwins, *op. cit.*, pp. 47 f., and *Antiquity*, xiii, pp. 50 ff.

² Robertson, *General View of the Agriculture in the County of Perth* (1790), p. 392, quoted by Gray, *op. cit.*, p. 165.

³ For the intentional production of lynchets, by ploughing alone, on a modern African coffee-estate, see *Antiquity*, vi, pp. 334 ff.

⁴ As with Crawford in the case of Calstone in *Wessex from the Air*, p. 166.

⁵ *Op. cit.*, p. 320.

terraces below them (fig. 1); at Culroust, where a low subsidiary ledge appears on one of the main terraces; and at Comtridge Knowe and Braemoor Knowe, where some evidence appears of the cutting-back and steepening of terrace fronts—again no doubt, to widen the cultivable strips.¹ That such working-over may have taken place in very recent times is suggested by a statement made to me by the present farmer of Nisbet, to the effect that his grandfather had grown potatoes on the terraces behind the house; while the presence, on the fronts of certain terraces, of trees, which may represent the remains of overgrown hedge-timber,² suggests that the terraces in question may have been abandoned as lately as between

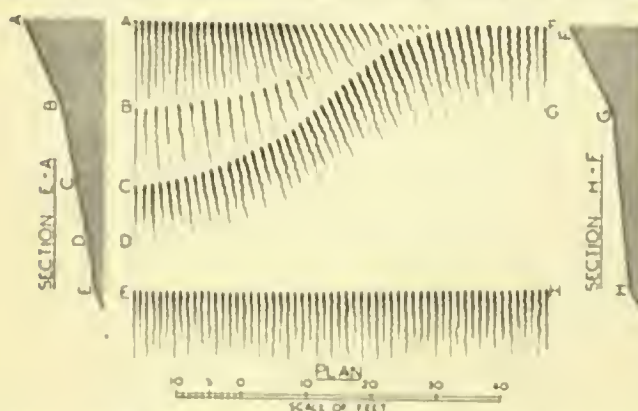


Fig. 1. Sketch plan of part of the Dunsyre group, showing how a terrace has been dug away to broaden the surface of the adjoining one.

a hundred and a hundred and fifty years ago. It goes without saying, of course, that a process of lynchet-formation begun in the distant past would have continued at any subsequent period at which the ground was again brought under cultivation. The idea of the possible re-working at a later date of previously formed terraces deserves to be considered in connection with another troublesome problem—that presented by the terraces included in List G, which either have rigs so closely associated with them as to form part of the same group, or which actually turn into rigs on running out on to flat or flattish ground. The situation at Dunsyre can hardly be explained on any other hypothesis than that the lower ends of the terraces, where they descend from the steeper to the gentler slopes, were flattened to some extent and laid up into lands along which rigs could be driven; and this explanation accords very well with the presence of an extensive system of rig-cultivation above, or north of, the terraces, as well as with the remains of other rigs occurring between the lowest terrace and the head-wall of the modern farm—the rigs having thus, as it seems, encroached closely on the terraced land wherever conditions permitted.³ At Braemoor Knowe (Pl. LXXXVII, 4, and Pl. LXXXIX, 1), again, the confusion of terraces and rigs is so profound that

¹ It is possible that the very wide spacing of the terraces at Ven Law and Stotfield Hill may likewise be due to the destruction of intermediate members of an originally continuous group.

² Particularly at Purvis Hill, where many of the trees have originated as coppice shoots.

³ Nothing can be said about the N.E. side of the site, where modern cultivation has destroyed everything. The S.W. side abuts on a steep and rocky hillside.



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1. Braemar Knowe group, showing combination of step-like terraces and horizontal rigs. Note faint traces of later vertical rigs in lower left corner.



2. Part of Tullymurchach group, showing terrace-like ends of rigs and, on left, ends of true terraces which occupy lower slopes of bluff not included in picture.

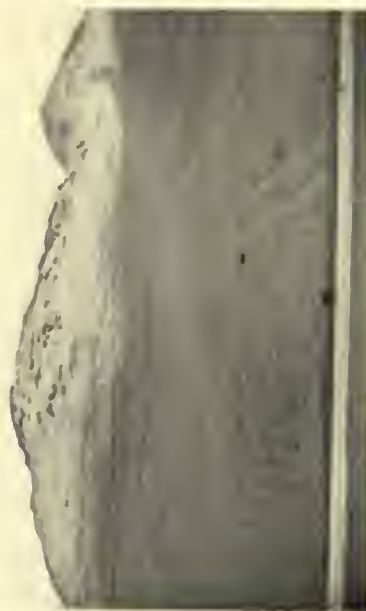


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1. Part of Headlaw Law group, showing later rigs (left) cutting across ends of terraces,



2. Terraces and rigs near Ingram, Northumberland.



3. Arthur's Seat, from Dimsapie, showing relation of terraces (in middle distance) and rigs (in foreground).



4. Part of Alva group, showing terraces and path.

it could only have arisen from the rigs having been laid out expressly in order to coincide with terraces which already existed, or—what is much more likely—from terraces and rigs having come into being together, representing respectively the forms assumed by strips of "horizontal" cultivation on steeper and gentler slopes.¹ At Tullymurdoch (Pl. LXXXIX, 2) only the latter of these explanations could possibly be held valid. A return will be made to this subject on p. 307.

IV. DISTRIBUTION.

The outline of the area covered by the present study, and the general distribution of the sites, are shown on the accompanying map (fig. 2). The regions most carefully examined comprise Strathmore and the Sidlaws; the S.E. corner of Perthshire; the counties of Clackmannan, Kinross, and Fife; the N.E. and E. fringe of Stirlingshire; the Lothians, Berwickshire, Peeblesshire, and Selkirkshire; Roxburghshire, less upper Liddisdale and Teviotdale above Hawick; and the Clyde valley from near Carstairs to above Elvanfoot, with the Moffat district. For comparison with these, I have also visited the Memnock and Dalveen passes, upper Nithsdale, the neighbourhood of Moniaive, the Ken and Dee valleys, some ground S.W. of Dumfries, parts of the triangle Glenluce—Wigtown—Newton Stewart, and the valley of Girvan Water; and, in Northumberland, the valleys of the College Burn, the Breamish, the Coquet, Rede Water, and the North Tyne, as well as the line of Hadrian's Wall.

Mr G. P. H. Watson and Dr K. A. Steer have also been so kind as to give me their respective observations on arens N.E. of Kirkendbright and on upper Eskdale.

Special and doubtful cases² being set aside, we are left, as has been said, with a hundred and thirty-six sites on the Scottish side of the Border, of which seven, not shown on the distribution map, may be ignored for one reason or another. The most salient facts concerning the distribution of the remaining hundred and twenty-eight sites may be stated as follows (*cf.* also fig. 2). There are two smallish areas which between them contain eighty-five per cent. of all the sites recorded. These areas are (a) S.E. Roxburghshire, where sixty sites are closely grouped together in the parishes of Yetholm, Morebattle, Hownam, and the E. part of Oxnam, while a further five are strung out along a line extending S.W. These Roxburghshire sites evidently form part of a considerably larger series, the E. portion of which is represented by the very numerous terraces that occur on the College Burn, Breamish, and Coquet. (b) The upper Tweed and Clyde, with their tributaries and the passes that unite them. These

¹ It must be clearly understood that these terraces are largely of the high and step-like form covered by List A. There is no question here, as there is in certain cases mentioned under List D, of oblique rigs belonging to "vertical" systems having acquired a lynchet-like form.

² *Supra*, pp. 295-6.



Fig. 2. Map of southern Scotland showing distribution of sites. The stippled areas have not been explored.

valleys contain a total of forty-five sites. Outside the foregoing areas we find no more than nineteen sites in all. Of these twelve are S. of the Forth, while N. of the Forth there are six still in existence, with a seventh, at Wester Pitlour, destroyed but known from record. In the S.W. counties I have neither seen nor heard of so much as a single example.

Having stated the facts shown by the distribution map, I must hasten to say that I attach but little importance to them. It is possible that the contrast presented by the S.E. and S.W. Lowlands may be significant, and so may also be the high concentration noted in the Cheviot parishes; but very much further than this it would probably be unsafe to go. A great deal of evidence exists to show that many of the terrace groups, as they now exist, are only the remnants of larger groups that have been partly destroyed by recent or modern cultivation; and if to this evidence we add the records of groups which have actually vanished, we are left with the suspicion that this process may have had very far-reaching results. The following summary of the evidence will show how this matter stands. To begin with the terraces that have vanished in the course of the last two centuries, we are told that the Wester Pitlour group was destroyed about 1800 in the course of agricultural expansion;¹ that "banks," which were evidently terraces, existed near Pallinsburn about 1772,² in a region where no vestige of a terrace can now be seen; that terraces existed in 1726 at Kirkurd and Skirling;³ and that at the same date the Romanno group was a mile in length.⁴ My own observations of crop-marks seem to bear out the last two records, and the crop-marks of other vanished terraces on the bank of Culter Mill Lead have already been mentioned. Signs of partial destruction can be seen at many sites, but a few examples may be noted as showing how later cultivations have encroached upon and partially obliterated parts of the terrace groups. The commonest thing to find is a modern system of enclosed fields extending uphill for some distance from a valley-bottom and cutting into the lower side of a group, while the higher-lying terraces rise to the natural limits of the cultivable ground. On sites of this kind the surviving terraces evidently owe their preservation to a worsening of the quality of the land at higher elevations; some typical examples may be seen at Halmyre Mains, Tor Hill, Brotherstone, Easter Mannel, and Chester Hill—at the last-named site, in particular, an original westwards extension of the group to better ground is proved by the existence of crop-marks.⁵ On Staneshiel Hill, again, much more is left of the terraces above than below the head-wall of the modern farm, and the same thing can be seen at many places in the Cheviot district. In contrast with the foregoing are some cases in which terraces have survived in especially low

¹ Small, *loc. cit.*

² Gordon, *op. cit.*, p. 115.

³ Pennant, *loc. cit.*

⁴ Gordon, *op. cit.*, p. 114.

⁵ The foregoing interpretation of this site is given notwithstanding *P.S.A.S.*, lxi. pp. 166 f.

situations, as on the banks of streams, the flatter or better-drained ground which adjoined the terraces at rather higher levels having been preferred by modern farmers. Hutton Mill, Flemington, and Catlee Burn are sites of this kind, while at Edston and at Woodhouse the terraces occupy a middle position on an awkward rocky slope which separates two cultivable zones. In some few cases it seems that plantations of trees, and not topographical features, have prevented the destruction of the terraces, as at Buchtrig, Romano Bridge, and Dunsapie (outside the Park boundary) it is only under the trees that anything survives. Sites on which marks of later cultivation can be clearly seen cutting into, or across the ends of, groups of terraces, but where no topographical or other division exists between the two, are Dunsapie (Pl. XC, 3), Countridge Knowe, Braemoor Knowe (Pl. LXXXIX, 1), Headshaw Law (Pl. XC, 1), Swindon, Kelso Hill, Nisbet Water (upper), Culter, and Whiteside Hill. A Northumbrian example is illustrated in Pl. XC, 2. In all these cases the later cultivation takes the form of rigs, whether straight or twisted; though at Whiteside Hill the terraces are cut off by the rigs on one side only, and on the other by the system of curving marks mentioned in List E. At Culter Shaw (Pl. LXXXVIII, 2), again, vertical rigs can be seen criss-crossing the terraces and extending to a considerably higher elevation; while at Stevenson and at Venchen a similar criss-cross appearance was noted. The foregoing facts, to which parallels could be found on some of the Northumbrian sites, are enough to suggest that a map of the existing groups may not really represent their original distribution at all, but only a distribution of those areas in which conditions—topographical, economic, or social—have permitted terraces to survive.

Support for this view may also be obtained from a comparison of the topography of, say, East Lothian, a district from which terraces are absent, with that of the upper Tweed valley, in which they are tolerably plentiful. In East Lothian the slopes are gentle and the features are rolling, rocky bluffs and crags being rare even at the highest elevations; and as a result, apparently, of this, and also no doubt of the excellent quality of the soil, modern cultivation has been able to spread everywhere, right up to the edges of the moorlands. On the Tweed, however, where the ground is much more broken, we find that a good deal of land, even at quite low elevations, has been omitted from the scheme of the modern arable farms; and it is just on these "left-out" areas, as has been explained above, that remains of terraces have frequently managed to survive. Again, in the Cheviot region, where terraces are commoner than anywhere else in Scotland, there are also innumerable traces of other cultivations—straight, twisted, and curving rigs of all dimensions and types, as well as remains of old turf dykes, ruined enclosures, and obscure superficial marks—which are almost as rare as terraces themselves in the districts that maintained an economy of arable farms throughout the nineteenth century. If, therefore,

modern ploughing has destroyed, as it evidently has destroyed, the rigs which must once have covered the arable lands of East Lothian, it may well have destroyed at the same time an unknown number of terraces—unless, indeed, the makers of the rigs had already done so at a much earlier date.

There thus appears to be every reason for using the map only with the greatest caution, the danger of errors arising from the factors just detailed being, in my opinion, great enough to make it unsafe to base any detailed arguments on mere geographical data. For example, certain other types of monuments, such as forts or early village-settlements, normally occur at higher altitudes than terraces, or on knolls or hill-tops, and must consequently have enjoyed a much better chance of survival than the terraces, which lie on the more easily cultivable slopes. Consequently, to compare the distribution of terraces with that of other monuments would almost certainly lead to fallacious results. This rule could only be departed from with safety in the case of a comparison that was stated on the very broadest lines, and I believe that the general contrast made by the presence of terraces in the eastern part of the country with their apparent absence from the west is the only fact connected with their general distribution on which it might be possible to build. For what it is worth, this contrast seems to tell equally against attempts to relate the terraces to Early Iron Age forts, to mediæval castles or monasteries, and to the centres of modern life. For a connection with the Dark Age, however, there is perhaps more to be said, as the concentration of terraces in the eastern Lowland counties cannot but tempt us to connect them with the Dark Age English settlements. It is true that the absence of terraces from East Lothian and from the lower Tweed basin does not accord with this theory, but I have already given reasons¹ for believing that terraces may have existed formerly in these districts, and that their present apparent local distribution inside the area of the eastern counties may consequently be misleading. If objection is made to a Dark Age date on the score that such sites as Tullymurchoch, Dundurn, or Markinch are outside the probable zone of Anglian influence, the facts reviewed in Part III can be quoted as suggesting considerable diversity in the dates and possible methods of formation of the various terrace-groups; and it might therefore be allowable to think of the practice of terrace cultivation as having spread gradually to outlying districts from a hypothetical region of origin, or of local introduction, situated, *e.g.*, in Bernicia.² This theory, moreover, agrees in a general way with that put forward by Crawford³ and by Raistrick and Chapman.⁴

¹ *Supra*, p. 304.

² In this connection, *cf.* an interesting suggestion made by Collingwood and Myres, *Roman Britain and the English Settlements*, pp. 211 *f.* and 442.

³ *Loc. cit.* And it is well to recall that the Orwins' arguments (*op. cit.*, pp. 310 *ff.*) are directed only against the association of these lynchets with an open-field system, and not specifically against their attribution to the Dark Age.

⁴ *Antiquity*, III, pp. 173 *ff.*

for similar material in Wessex and Wharfedale respectively. Unless, however, we suppose that the use of terraces, once introduced in this way, persisted for many centuries, the theory will conflict with the rather better-founded conclusions that will be reached below in Part V.

A further point which emerges from a study of the distribution of the terrace-groups is the complete unimportance both of elevation, whether absolute or relative, and of aspect. I have taken a note of these details on most of the sites that I have visited, and find that terraces may face any point of the compass and may occur at any height, within the cultivable zone, above either the level of the sea or the bottom of the adjoining valley. The highest-lying terraces noted are two groups on Goseland Hill; these lie between 1000 and 1200 feet above sea-level, and between 350 and 550 feet above the valley-bottom. The Culter Shaw group is also a high one, running up to about 1000 feet above sea-level though only some 250 feet above the valley-bottom. On Goseland Hill, however, rigs occur at a higher elevation than the terraces, and at Culter Shaw land was under the plough in 1937 to about 1100 feet. The lowest-lying groups known to me are those on Haggis Knowe and above Duddingston Loch, the former lying about 150 feet and the bottom of the latter just under 200 feet above sea-level. Records of aspect made on a hundred sites were subjected to statistical analysis, and this showed that the total discrepancy between the frequencies of the various aspects as actually observed and as expected (*i.e.* on the hypothesis that no particular aspect was favoured) was nowhere near the significance level and could consequently be ignored with safety. No further notice need therefore be taken of these matters, except for the purpose of correcting the erroneous views that are sometimes expressed regarding them.

One definite, though perhaps not very important, fact does appear to emerge from a study of the local distribution of the terraces, and that is that terraces are regularly found in close proximity to lands that are still under the plough, or that have been so in the fairly recent past. A great deal of evidence of this has already been given by implication in the foregoing discussion of the destructive effect of modern farming operations, and even a hasty tour of the Cheviot valleys will provide very full corroboration. Subject to the proviso that terraces generally occur on higher ground,¹ often on more difficult or less fertile ground, and sometimes on less accessible ground than that which modern farmers affect, it might almost be said that their local distribution coincided to a substantial degree with that of the eighteenth- and nineteenth-century farms. They thus appear to reflect an agricultural system which possessed a basis similar to that of our own.

¹ Possibly on account of the uncleared or undrained state of the lower-lying lands.

V. ASSOCIATION WITH OTHER REMAINS.

Suggestions have sometimes been made that terraces are to be associated with other remains, of one kind or another, on grounds of geographical distribution; and it is true that, in respect of forts at least, a geographical argument might seem superficially plausible in view of the occurrence of terraces in such districts as the upper Tweed valley or the Cheviots, where forts are plentiful.¹ But enough has already been said to show that this question cannot be dealt with on a wholesale scale by geographical methods, while arguments based on individual cases involve the difficulty of proving the existence of a real "connection" between a given terrace-group and a neighbouring fort or castle. To hold that connection is proved by mere proximity, however close this may be, involves an obvious fallacy; and even if this point were ignored, the difficulty would remain of fixing an arbitrary limit of distance within which connection should be considered to hold good. But to fix any arbitrary limit would involve such a number of other arbitrary assumptions as would vitiate the argument from the outset, and statistics obtained in this way would consequently be valueless. If, therefore, terrace-groups are to be associated with other monuments, this can only be done on the strength of real structural connections found to obtain between them. The problem is thus resolved into one of identifying cases in which such structural connections exist.

Something bearing on this subject has already been said in connection with the relation of terraces to other forms of cultivation. On the one hand,² it has been noted that modern enclosed fields regularly encroach upon, and are therefore later than, the adjoining terrace-groups; but on the other hand, contradictory evidence has been adduced regarding the apparent relative dates of terraces and rigs, as in some cases³ the rigs seem clearly to be intrusive, while in others⁴ their connection with the terraces is so intimate as to suggest that terraces and rigs were simply alternative forms of the "horizontal" cultivated strip, occurring the one on steeper and the other on flatter ground. Nor is it possible to explain away all these latter cases as exemplifying the adaptation of terraces by farmers accustomed to use rigs, notwithstanding the real occurrence of this in certain places.⁵ It seems necessary to accept the contradiction and to conclude that terraces and rigs are not manifestations of two sharply differentiated periods, but that, while some rigs are certainly later than some terraces, and terraces in general seem to have been forgotten long before rigs finally became obsolete, the two were in use together for some period of indefinite length. No positive evidence exists for dating either

¹ Cf. also Chambers, *History of Peeblesshire*, pp. 40 f., and Penneculk, *Description of Tweeddale*, p. 187.

² *Supra*, p. 303.

³ *Supra*, p. 304.

⁴ *Supra*, p. 300.

Supra, p. 299.

end of this period, which may have begun, as has been said,¹ under Anglian influence, and may likewise have persisted throughout the Middle Ages, to give it no later extension.

If we pass from the rig-cultivations to remains that admit of rather more accurate dating, we find that, in Scotland, reasonably convincing evidence is forthcoming only at Old Thornylee. Within the terraced area at this site there is a complex of ruins, belonging apparently to two periods, and perhaps going back as early as the late Middle Ages.² The ruins stand upon ground which has been partly levelled up by means of a terrace having masonry revetment in its face. The shape and disposition of the lynchetted plot that lies immediately below this terrace evidently presuppose the existence of the inhabited site, as does also the lay-out of the dyke which formerly bounded the S. side of the area. We have thus some definite grounds for dating the origin of the Thornylee group to the late Middle Ages at earliest. It must, however, be remembered that this group is peculiar in respect both of the size and shape of its constituent parts, most of which could be better described as lynchetted plots or fields than as actual terraces, and also of their disposition inside a boundary dyke and with their lynchets lying at a wide angle to the contours.³ It would therefore be unsafe to use the foregoing conclusion, without other supporting facts, as evidence for dating all types of terraces alike to the Middle Ages. The possibility of important modifications having been made at Thornylee in fairly modern times must also be borne in mind, on account both of the plentiful traces of rig-cultivation on the plots and also of a local tradition which records the former existence of a community of weavers somewhere in this vicinity.

A real connection between terraces and a path can be seen in the case of the Alva group (Pl. XC. 4). Here it is evident that the path, which leads up Alva Glen into the Ochils, existed before the formation of the terraces, as these are "staggered" on either side of it in a way that presupposes its existence. However, this fact is of little practical value, as the age of the path is unknown.

Other evidence of this kind is at once unreliable and scanty. Suggested connections with forts can be ruled out for reasons already given,⁴ while the true relation of the uppermost terraces of the Purvis Hill group to the

¹ *Supra*, p. 305.

² The lands of Thornylee originally belonged to the Crown, forming part of the Forest of Eddick. They were granted to Sir James Douglas in 1321 or 1322, but in 1455 were resumed by the Crown, Thornylee being mentioned as a forest-stead in 1468. In 1510 the lands were granted to Patrick Crichton, who was bound to build upon them a house of stone and lime and to effect certain other improvements (see Buchan, *History of Peeblesshire*, II. pp. 390-4, and Craig-Brown, *History of Selkirkshire*, I. p. 475, where further details are given). It would, however, be unsafe to correlate any of the existing ruins with Patrick Crichton's house.

³ A certain similarity with the Buchtrig group may, however, be noted, particularly the existence at the latter site of the foundations of a small rectangular house.

⁴ *Supra*, p. 307.

ridges and lynchets that mark the outline of the enclosures surrounding Purvis Hill Tower,¹ or the farm-house that succeeded it on the site,² could only be cleared up by excavation. Nor can anything be learned from superficial observation of the oblong enclosure that stands on the uppermost terraces of the Dunsapie group, high up on the E. side of the Lion's Haunch.

It is, fortunately, possible to supplement the Scottish data with evidence obtained in Northumberland. This time the connection proved is one between terraces and early village-settlements. Definite proof of the temporal relation of terraces and village settlements has not as yet been found on any of the Scottish sites,³ and I am therefore very greatly indebted to Mr A. H. A. Hogg, of King's College, Newcastle-upon-Tyne, for having shown me two sites discovered by him near Ingram,⁴ where the priority of the settlements to the terraces appears with convincing clearness. At Middledean "Large Village," terraces which are precisely similar to those existing outside the inhabited area may be seen intruding among the huts at more than one place; while elsewhere stones from the ruined ramparts seem to have been cleared away to leave space for terraces which skirt the exterior of the settlement. At Middledean "Small Village," again, some adjoining terraces⁵ actually cut through and destroy part of the structure. On the current assumption that settlements of this type are datable to Roman times, these facts give us a satisfactory *upper* limit for the possible age of at least these groups of terraces. On the converse question, of how much *later* than the Roman period the terraces may be supposed to have originated, they naturally tell us nothing; and there is thus no conflict between the conclusions drawn from these sites on the one hand and from Old Thornylee on the other.

A conflict does, however, appear to arise when we consider the case of Housesteads, where a terrace was held, as a result of excavation, to have originated during the period of Roman occupation,⁶ and a word of explanation is therefore necessary. The fact appears to be that the ground lying S. and S.E. of the fort bears two different systems of terraces, the distinction between which may readily be overlooked. In the first place, there is a system which flanks the two sides of the Roman road between

¹ Chambers, *History of Peebleshire*, p. 41.

² *P.S.A.S.*, i. p. 128.

³ On Kaim Burn a terrace reaches to within 10 yards of the rampart of a settlement, but failing excavation there is nothing to show whether the terraces of this group represent the arable land belonging to the settlement or whether they were made—or were allowed to form—along lines which purposely just avoided an already existing, and probably ruinous, settlement. A similar difficulty was encountered at Westnewton, near Kirknewton, Northumberland.

⁴ O.S. 6-inch sheet Northumberland XXXVII S.W. These sites have been planned by Messrs E. G. Taylor, H. E. Couzens, and A. L. H. Pratt, of King's College, Newcastle-upon-Tyne, and publication is to be looked for shortly.

⁵ At the point in question these terraces are running almost at right angles to the contours, but not far off they swing round into a more nearly horizontal position. They are thus comparable with some of those included in List G.

⁶ *Arch. Jcd.*, 4th series, xi. p. 186.

the Vallum and the S. gate of the fort; these terraces carry the foundations of the *vicus* buildings, and may be regarded as terraced building-sites made necessary by the steep slope of the ground. In the second place, there is a group of cultivation terraces, marked with longitudinal rigs, lying E. of the *vicus* and covering a considerable area S.E. of the fort; these intrude upon the terraces of the *vicus*, which are narrower, and at the junction of the two systems there are some indications that the stonework of the Roman terraces and foundations has been cleared up to leave space for the plough. As the cultivation terraces do not penetrate as far W. as the Roman road, it is to be presumed that the terrace dated by the excavation was one of *vicus* building-sites; and on this reading of the evidence the cultivation terraces must be dated to some period that is definitely later than the abandonment of the *vicus*. A mediæval or even later date would, therefore, be perfectly compatible with the Housesteads evidence.

VI. SUMMARY OF CONCLUSIONS.

The few positive conclusions that seem to emerge from the foregoing paper may be stated shortly as follows:—

1. Terraces are of several different kinds; it is possible that no single theory as to origin or date will fit all alike.

2. Some terraces have, in all probability, formed themselves, through the accumulation of disturbed soil along the edges of cultivated strips; while others appear to have been constructed purposely, or to have had their formation assisted by artificial means.

3. Local distribution, in areas where considerable numbers have survived, indicates that terraces occur on much the same ground as the rig-cultivations. Their location is not governed by elevation or aspect.

4. Modern cultivation has destroyed all trace of earlier systems over such large areas that little faith can be placed in the distribution map.

5. Subject to the warning stated in No. 4, general distribution points to Northumbria as a likely place of origin; and this fact in turn suggests a connection with the Anglian occupation of the country.

6. The few groups of terraces that are associated¹ with other remains are, respectively, earlier than the modern enclosed fields and later than (a) an apparently mediæval building, (b) two early village-settlements; while their relations with rig-cultivations are confused—the rigs being later than the terraces in certain cases and contemporary with them in others. These facts could be explained by dating the terraces in question to the late Middle Ages or later, and supposing that terraces and rigs were in use jointly over a long period of time. This theory is preferable to one connecting the terraces with the Anglian occupation, but the two

¹ In the strict sense of actual contact.

need not necessarily conflict if the terraces are supposed to have remained in use for a sufficiently long period.

7. The literary evidence supports the idea that terraces had gone out of general use by the middle, if not by the beginning, of the seventeenth century.

APPENDIX.

List of terrace groups and other sites noted for the purposes of the present paper.

NOTE.—**Clarendon** type is used for the names of particularly large or important groups, and *italics* for those which are not shown on the distribution map.

I. CHEVIOT DISTRICT.

ROXBURGHSHIRE (6-inch O.S. map revised in 1918).

Venchen.—N.N.E. of Venchen Farm, below fort on Castle Law. **XXI.**

Stnerough Hill.—On N.N.E. face of hill, above road. **XXI.**

Davie Rig.—On N. face of hill, above head-wall. **XXV.**

Burnhead.—On hillside W. of Burnhead. **XXV.**

Crookedshaws.—On N.W. slope of Crookedshaws Hill. **XXV.**

Shereburgh Hill.—On N.W. slope, above plantations and head-walls. **XXV.**

Shereburgh Hill.—On S.W. slope, extending to S. **XXV.**

Elghope Burn.—On right bank of burn, W. of lower Countridge plantation. **XXV (marked).**

Countridge Knowe.—On S.W. face of Countridge Knowe, S. of plantation. **XXV (marked).**

Wood Hill.—At N. end of hill, S.W. and S.E. of plantation. **XXV.**

Wood Hill.—Above Woodside Farm. **XXV.**

Cliftoncote.—Immediately N.W. of the house. **XXV.**

Place Hill.—On slopes S.W. of Belford. **XXXI.**

Wondrum Hill.—N., N.E., and E. slopes of hill, from above Mow to enclosed lands of Calroust. **XXXI.**

Calroust Burn.—On right bank of burn, N. of plantation opposite Calroust house. **XXXI (marked).**

Singingside Burn.—W. of burn, below square plantation. **XXXI.**

Singingside Burn.—At head of burn, between Green Cleugh and The Street. **XXXI.**

Calroust.—Above the house. **XXXI.**

Mow Law.—On N.E. slope of N. spur of Mow Law. **XXXI.**

Swindon Shank.—On left bank of Bowmont Water, below and E. of site marked "Fort." **XXXI.**

Swindon.—S.E. of the last, and immediately W. of upper part of enclosed lands lying above old houses. **XXXI.**

Bught Slack.—On S.W. face of Bught Slack. **XXXI.**

Sourhope Sike.—N.E. of the last, on right bank of Sourhope Sike. **XXXI.**

Sourhope Burn.—On right bank of burn, above houses. **XXXI.**

Sourhope Burn.—N. of the last, and adjoining Gloomy Cleugh. **XXXI.**

Fusset Hill.—On S. slope of Fusset Hill, about 400 yards E. of Sourhope. **XXXI.**

Cock Law.—N.W. of fort on point 1223, and above turf dyke marked "Earthwork." **XXXI.**

- Fundhope Rig.—On bluff between Kingseat Burn and tributary. XXXI.
- Braemoor Knowe.**—On lower S.W. slopes of Braemoor Knowe. XXIV and XXX (marked).
- Braemoor Knowe.—About 600 yards N. of N. end of the last, above head-wall. XXIV.
- Hownam Burn.—On slope above left bank of burn, N. of Hownam Rings fort. XXXI.
- Haystuck Knowe.—In forks of Hownam Burn and Crooked Burn. XXXI.
- Bierhope Burn.—On left bank, E. of Over Whitton. XXX.
- Bierhope Burn.—On right bank, opposite Over Whitton. XXX.
- Thowliestane Hill.—On S.W. slope. XXX.
- Thowliestane Hill.—On S.E. slope, near Allerton Syke. XXX.
- Hownam Steeple.—On W. slope. XXX.
- Horseshoe Wood.—To S.W. and S. of the wood. XXX and XXXI.
- Troushaw Hill.—On E. face, from S.W. of Greenhill to enclosed lands S. of Hownam. XXX.
- Headshaw Law.**—On the lower S. and W. slopes, extending much farther to N. and S.E. than is shown on O.S. map. XXXI.
- Big Law.—Below Biglaw Plantation. XXXI.
- Little Rough Law.—On N.E. slope, above Heatherhope Burn. XXXI.
- Little Rough Law.—On S.W. slope, flanking valley above The Yett. XXXI.
- Henshaw Law.—On lower W. slope of Henshaw Law, in enclosed ground of The Yett. XXXI.
- Philogar Hill.—On E. face of hill, below a horizontal strip of trees. XXX.
- Chatto Hill.—On W. face of hill, above Nether Chatto. XXX.
- Dod Law.—On N. slope of Dod Law, opposite Over Chatto. XXX.
- Over Chatto.—On left bank of Coldside Burn, W. of Over Chatto. XXX.
- Chatto Craig.**—On the N.E. slope of the hill, towards Over Chatto. XXX.
- Chatto Craig.—On E. and S.E. slopes of shoulder which extends E. from the fort. XXX.
- Wideopen Cleugh.—On left bank of Wideopen Cleugh and extending to left bank of Kale Water. XXX.
- Shank End.—On left bank of Kale Water S. of Wideopen Cleugh. XXX.
- Buchtrig.—Under trees 400 yards S.W. of house. XXXVI.
- Hangingshaw Hill.—On S.W. slope of hill, opposite Tow Ford. XXXVI.
- Woden Law.—On N.W. slope of hill. XXXVI.
- Woden Law.—On S.W. slope of hill. XXXVI.
- Loddan Hill.—On lower E. slope of hill, above left bank of Kale Water. XXXVI.
- Nether Hindhope.—On lowest slopes of Hindhope Law, S.E. of Nether Hindhope Farm. XXXVI.
- Kelso Hill.—On W. slope of hill, S.E. of Swineside Hall. XXX.
- The Law.—On N.E. slope of The Law, S.W. of Swineside Hall. XXX.
- Bloodylawes.*—Between farm buildings and bank of Oxnam Water. XXX.
- Pier Knowe.—On W. slope of Pier Knowe. XXXVI.
- Stotfield Hill.**—On S.W. slope of hill, opposite Edgerston policies. XXXVI.
- Letham.—About 600 yards N.E. of Letham, on S.E. slope of spur extending N.E. from point 984.6. XXXV.
- Southdean Law.—On N. side of summit, above head-wall. XXXV.
- Cutlee Burn.—On left bank of burn immediately N. of Hell's Hole. XXXX.

II. TWEED-CLYDE DISTRICT.

SELKIRKSHIRE (6-inch O.S. map revised in 1897).

- Bowerhope.**—On S.E. shore of St Mary's Loch, immediately E. of enclosed lands of Bowerhope. XIII N.E.
Eldinhope.—On N.W. slopes of Eldinhope Knowe, and extending S.W. to shoulder of Hill 1291. X S.E. and S.W., and XIV N.W.
Clovenfords.—On W. slope of Meikle Pots, about 300 yards E. of Meikle Farm and just outside the wall bounding the cultivated lands. VII N.E.

PEEBLESHIRE (6-inch O.S. map revised in 1897-8).

- Old Thornylee.**—On lower S.E. slopes of Cauld Face, and descending to Thornylee-Bow side-road. XIVA S.W.
Purvis Hill.—Above road, immediately W. of Walkerburn. XIV S.W. (marked).
Tor Hill.—On N.E. slope of hill. XIII S.E.
Ven Law.—Between Venlaw House and Edinburgh road. XIII N.W.
Neidpath Castle.—Near castle, on S.S.E. XIII N.W.
Edstone.—Immediately W. of Edstone Quarry Plantation, above head-wall. XIII N.W.
Cadennuir Hill.—On N.W. slope of Cadennuir Hill, about half-way between Red Well and fort site on point 1314. XII S.W.
Woodhouse.—Between Woodhouse and Glack, above road. XII S.E.
Glenternie.—Above head-wall of enclosed lands lying S.W. of policies. XVI N.E.
Mucheth's Castle.—On slope of Wood Hill, N.E. of Mucheth's Castle, just S. of wall running E. and W. XVI N.E.
Meldon Cottage.—Immediately adjoining W. side of Eddleston-Lyne road, about 300 yards N. of Meldon Cottage. XII N.E.
Stevenson.—On S.W. side of S. end of Stevenson Hill, above head-wall. XII N.E.
Wood Hill.—At N. end of scrub-wood 500 yards S.S.W. of Flemington. VIII S.W.
Wood Hill.—At a higher elevation than the last and nearly half a mile farther downstream, about opposite eighth milestone from Peebles on road. VIII S.W.
Whiteside Hill.—On lower W. slope of hill, opposite B.M. 718.7 on Lyne-Romanno road. VIII S.W.
Whiteside Hill.—On same slope, S. of the last. VIII S.W.
Newlands.—S. of old church, at point marked "Grahames Walls." VIII N.W.
Romanno.—Between Newlands Church and Romanno Bridge. VIII N.W. (marked).
Romanno Bridge.—In lower ends of two strips of wood adjoining road just N.E. of houses at Romanno Bridge. VIII N.W. (one group marked).
Halnuyre Mains.—On N.W. face of summit of Hill 1171, above head-wall. VIII N.E.
Woolshears Wood.—Just within enclosed ground below felled portion of wood (crop-mark). XII N.W.

- Shaw Hill.**—On E. face of hill, at elevation c. 950–1050 feet. VII S.E.
Muirburn Hill.—On S.S.E. face of hill. XI N.E.
Skirling.—On S.E. slope of Mill Hill, c. 300 yards N.W. of church (crop-mark). XI S.E.
Goseland Hill.—On both sides of hollow at head of Bamflat Burn. XV N.E.
Goseland Hill.—On right bank of Clengh Burn, near its head. XV N.E.
Mitchellhill.—On face of bluff forming left bank of burn from E. to S.W. of Mitchellhill Farm. XV N.W. (marked).
Kilbucho Church.—Just above head-wall of field lying S.W. of church. XV N.W.
Logan Burn.—On both banks of Logan Burn, above and below junction with Dry Burn. XIX N.E.
Cockiland Hill.—On S.W. slope of hill, just above and E. of S.E. corner of stone wall enclosing fields on right bank of Tulla Water. XIX S.E.
Victoria Lodge.—About 600 yds. S.E. of the last, behind and N.W. of Victoria Lodge. XXIII N.E.

LANARKSHIRE (6-inch O.S. map revised in 1896).

- Dunsyre.**—On lower E. and S.E. slopes of Dunsyre Hill. XXI S.E.
Kilbucho March.—S. of Kilbucho-Culter track, c. 200 yards W. of county boundary. XL N.W.
Nisbet.—On slope immediately behind Nisbet Farm. XL N.W.
Nisbet Water (lower).—On left bank of burn, between enclosed land and lip of ravine. XL S.W.
Nisbet Water (upper).—Above left bank of Nisbet Water, c. 1000 yards upstream from farm. XL S.W.
Culter Shaw.—On S.E. face of Shaw Hill, c. 400 to 900 yards N.E. of the farm. XL N.W.
Culter.—On W. extremity of Eastmains Hill, S.E. of manse. XL N.W.
Culter Mill Lead.—At foot of slope rising from left bank of mill leat c. 300 yards W. of bridge on Culter-Birthwood road (crop-mark). XL N.W.
Roberton.—Immediately above modern cultivation on slope above left bank of Roberton Burn, N. of village.¹
Fagyad Hill.—On N.W. slope of hill, about 150 yards above road and beside a circular enclosure. XLVI N.E.
Hartelough Burn.—On bluff dividing basin of Hartelough Burn from main valley, on W. of burn. XLVI N.E.
Kirkton Rig.—On lower N.E. slopes of Kirkton Rig, in basin of Hurl Burn. XLVII N.W.
Hurl Burn.—About 200 yards E. of Hurl Burn and 300 yards above road. XLVII N.W.
Gair Gill.—On right bank of Gair Gill, above modern fields. XLVII N.W.
Elvanfoot.—On slope of Reeve Gair, above marshy flat and c. half a mile W.S.W. of Elvanfoot Station. I N.W.

¹ This group could not be included in the distribution map as it was only found—by Mr O. G. S. Crawford, during an aerial reconnaissance—after the block of fig. 2 had been prepared.

III. OTHER DISTRICTS.

BERWICKSHIRE (6-inch O.S. map revised in 1896-8).

- Hutton Mill.**—On left bank of Whitadder, c. 400 yards above Hutton Mill. XVII N.E.
Chester Hill.—On steep slope below and N.E. of fort. XII N.W.
Primrose Hill.—Adjoining and below Staneshiel Fort. X S.E.
Staneshiel Hill.—On S. slope of hill, W. of Staneshiel Fort. X S.W.
Barnside Hill.—On right bank of Monynut Water, above Abbey St. Bathans. X N.W.
Brotherstone.—Below crags on S. face of Brotherstone Hill West, between Brotherstone and Craig House. XXX N.E.

ROXBURGHSHIRE (6-inch O.S. map revised in 1918).

- Rutherford.**—In a plantation bordering Kelso-St Boswells road, immediately N. of Rutherford Station. XIX.

MIDLOTHIAN (6-inch O.S. map revised in 1892-4).

- Heriot Siding.**—Immediately above N. end of siding, at foot of slope of Cukemuir Hill. XV S.W.
Middleton.—On right bank of Middleton North Burn, in second field upstream from line-works. XIV S.E.
Duddingston.—On slope between Duddingston Loch and Queen's Drive. III S.E. and IV S.W.
Dunsapie.—On E. slope of Arthur's Seat above Queen's Drive, with outliers to S. and E. of Dunsapie Fort—the latter outside Park wall, under trees. III N.E. and S.E. and IV N.W.
Haggis Knowe.—On N.E. slope of Haggis Knowe. III N.E.

STIRLINGSHIRE (6-inch O.S. map revised in 1895-6).

- Easter Mamel.**—Near and to S. of Linlithgow-Polmont road, c. half a mile W.N.W. of Linlithgow Bridge. XXXI S.E.

CLACKMANNANSHIRE (6-inch O.S. map revised in 1899).

- Alva.**—On S. slope of Wee Torry, immediately above Alva and W. of Alva Glen. CXXXIII N.E.

FIFE (6-inch O.S. map resurveyed in 1893-5).

- Inverkeithing.**—On slope above and below cemetery. XLIII N.W.
Wester Pitlour.—Just below fort; now destroyed. XII S.W. (marked).
Markinch.—On N.W. face of Markinch Hill. XX S.W. (marked).

PERTSHIRE (6-inch O.S. map revised in 1894-1900).

- Dundurn.**—On W. slope of St Fillan's Hill, below fortifications of Dundurn. XCIII S.E.
Newton Bridge.—On lower slopes of Meall Reamhar, above house standing N.W. of bridge. LXXXIII N.E.
Girron.—Between farm-house and main road. LXXI S.E.
Tullymurdoch.—On N. side of road, c. 300 yards E.S.E. of Tullymurdoch. XLII S.E.

NOTES.

1. ROCK SCRIBINGS AT HAWTHORNDEN, MIDLOTHIAN.

The figures here described are preserved in a shallow recess or shelter some 25 feet above the present bed of the Esk in the gorge cut by that river through the sandstone formation between Hawthornden and Roslin Castles. About 100 yards farther upstream and some 20 feet higher up in the cliffs is the artificial grotto popularly known as Wallace's Cave.

The recess occupies a shelf in a precipitous cliff and is itself triangular in shape, nearly 10 feet wide at the mouth and about 8 feet deep. The ledge forming the floor of the shelter is anything but level and slopes up in steps to the interior. Nevertheless an accumulation of earth, mixed with splinters of rock, had formed upon it to a depth of 1 foot 9 inches against the left-hand wall and rising to 2 feet 9 inches in the centre of the recess. Along the left-hand wall the cliff overhangs as much as 3 feet 8 inches when it is 7 feet above the rock floor, but in the inner corner the overhang is only 2 feet 3 inches, and along the right-hand wall it contracts gradually to zero at the mouth.

On the left or north wall of the recess the carvings are arranged serially along a well-defined bed in the sedimentary rock, exposed in the cliff-face 4 feet 6 inches above the floor of the ledge (Pl. XCI. 1).

This band itself overhangs the base of the shelter wall. The constituent rock is neither very fine nor firm, the surface being interrupted by hard pebbles and defaced by scaling. The scaling, concretions and natural fissures bounding the bed make the precise definition of some of the figures precarious. The recognisable figures are as follows:—

(a) Small irregular circle from the circumference of which a groove descends vertically to the centre.

(b) Larger circle, badly weathered in the interior, from which a channel, almost certainly artificial, descends.

(c) Scentiform design, 1 foot 8 inches high. The lower margin has practically disappeared below the lower edge of the bed. Within the outline evidently pecked markings run into natural weathering scars, but the general effect is clearly to suggest a schematic human figure.

(d) Small circle with a bar descending from the centre to the circumference.

(e) A series of six (or seven) sunk triangles the whole surfaces of which have been hollowed out by pecking. The apex of the first triangle impinges upon circle (d). Triangles 1 and 2 are joined at the base as are triangles 3 and 4, but distinct septa divide 2 from 3 and 4 from 5. The bases of the first four are well defined, those of the remainder so obscure that triangle 5 looks like a lozenge and 6 seems to extend below the base line common to the first four; both these exceptions may, however, be due to scaling, and what looks like another triangle between 5 and 6 may be a flaw in the rock. Below the first two triangles the re-entrant rock slope has certainly been pecked, but the surface has weathered too badly to allow us to define the marks or to say whether they could be linked up with circle (d) to make a schematised human figure.

(f, g) Three conjoined vertical strokes, 10 inches long and an irregular circle suggesting a monogram IHO. The uprights terminate below in bars, quite



1. View of Recess.



2. Scribbings on Left Wall, a-g.
HAWTHORNDEN.

PLATE XCI.

[To face page 316.



1. Corner of Recess.



2. Scribbles on and below Right Wall, k-m.
HAWTHORNDEN.



The Benker.

Benker Burial at Innerwick.



The Clst.



Clay and Cobble Foundations near the Roman Fort at Munrills.



The Cathcart Panels.



The Montrose Panels.



Jet Necklace (partly reconstructed) from a cist in Strathnaver. (1.)



1. Silver Chain from Traprain Law, East Lothian. (1.)
2. Silver Chain from Greenlaw, Berwickshire. Photographed by courtesy of the Right Hon.
The Earl of Home. (1.)

like scripps, but the upper ends coincide with a joint in the rock. The horizontal bar never reaches (*g*) (Pl. XCI, 2).

Some 3 feet below (*c*) is a horseshoe-shaped outline crossed with a horizontal bar from which a vertical bar descends (*c*₁). This was covered with earth when we arrived.

After an angle in the rock the main series is continued by a circle from which a groove projects obliquely upwards. Above this where the rock begins to overhang is another circle. Farther round beyond a fissure is a group of three concentric circles with an overall diameter of 1 foot (Pl. XCII, 1).

On the right-hand wall (Pl. XCII, 2) we have—

(*k*) An S spiral, 8½ inches high with a long "crest."

(*l*) A complicated double-spiral, one arm of which continues into a badly weathered area beneath a natural hole in the rock.

(*m*) In an inaccessible position 3 feet above (*l*) a small spiral very clearly pecked.

Below the band supporting (*k*) and (*l*) the rock slopes obliquely towards the front of the shelter, as shown in Pl. XCI, 1, right, but its surface is peeling off. On this deteriorated surface we can still discern nine or ten circles, defined by relatively wide pecked outlines.

In the bottom left-hand corner of Pl. XCII, 2, a group of three finer concentric circles is just visible where the outer skin of the rock begins to scale off. To the right of the tape is a very blurred spiraliform figure joined above to a small circle and impinging upon another circle to the right. Beyond a vertical channel is another group of markings, much deteriorated and traversed by an oblique fissure in the rock.

All the markings here described have been executed by pecking. We can detect no technical difference, save in the quality of the rock, between the "alphabetiform" signs (*f* and *g*) and the spirals and circles.

The technique of their execution suggests attaching the Hawthornden scribings to the well-known series of memorials of Scottish Bronze Age art represented by "cup-and-ring markings." But there are conspicuous discrepancies, the most obvious being the complete absence of "cups." Moreover, the Esk valley lies rather outside the regular range of typical "cup-and-ring marks." The nearest parallel both in space and time is the cist-cover from Lammeha¹ on the Esk-Tweed watershed in Peeblesshire. And the latter by its good spiral seems to be connected with art slightly earlier than the classical cup and ring marks and better represented in Ireland than in Scotland. There other figures in our group recur; in addition to spirals a relative of our figure (*c*) occurs in series 2 at Lough Crew,² and sunk triangles in the latest series at New Grange.³

Breuil has established the close stylistic affinities between this Irish Bronze Age art and the conventional paintings of the Iberian Peninsula. There we can find parallels not only to the Hawthornden spirals,⁴ barred circles,⁵ and scrolliform figure,⁶ but even to the "alphabetiform" Group III. At Ladrone in Andalusia it patently results from the conventionalisation of a man shooting a stag.⁷ In a naturalistic form this scene was popular even in Spanish Art-Group II, that may be paleolithic. In the later "Copper Age Art" (Burkitt's

¹ *Proc. Prehistoric Soc., East Anglia*, vol. vii, (1934), p. 398, fig. 27.

² *Ibid.*, p. 296, fig. 7.

³ Breuil and Burkitt, *Rock Paintings of Southern Andalusia*, pls. xv. and xix.

⁴ Breuil, *Les Peintures rupestres schématiques*, i. p. 40.

⁵ Breuil and Burkitt, *op. cit.*, pl. xxv.

⁶ *Ibid.*, fig. 21.

⁷ *Ibid.*, pl. xxvii.

Group III.) all the stages in its conventionalisation to the alphabetiform III symbol are documented.

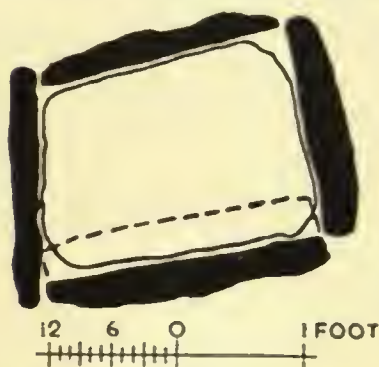
Professor Breuil, who has kindly examined our photographs, recognises conventionalised human faces or figures in our signs (a), (c), and (c₁).¹ The origin of these conventionalisations can also be traced most clearly in the Peninsula. But if this be the ultimate origin of the designs carved at Hawthornden, the immediate inspiration of their authors must be Irish. Hence our carvings illustrate an extension of Irish influence to Midlothian such as is suggested also by the decoration of certain food-vessels from the county.²

The authors are indebted to Sir James Drummond of Hawthornden for permission to study these interesting memorials of the remote past.

V. G. CHILDE and JOHN TAYLOR.

2. A BEAKER BURIAL FROM INNERWICK, EAST LoTHIAN.

W. Macnaughton, tenant of the Board of Agriculture's Lot 114 at Thornton, Innerwick, East Lothian (Haddington, sheet xii (1854)), turned up a cist while ploughing on 18th May. He reported the discovery to the police at Dunbar who removed the urn and bones. The site was visited on the 20th. Mr Macnaughton kindly uncovered the cist which had been filled in.



The cist was sunk in the red till without any cairn on the crest of a low ridge running parallel to Thornton Burn about 20 yards south of the stream, but not quite at the highest point of the ridge which rises a few feet to the west. The cist lay roughly east and west and was composed of four well-fitting slabs, measuring respectively north, in length, 2 feet, east, 1 foot 8 inches, south, 2 feet 3 inches, and west, 1 foot 9 inches. The west end slab overlapped the two side slabs so that the internal width of the cist at this end was only 1 foot 5 inches. The south side slab had tilted inwards under the pressure of the earth outside it, reducing the width of the cist at its mouth to 1 foot 4 inches and 1 foot 3 inches at the east and west ends respectively. The floor of the cist was formed by a single slab, 11 inches below the top of the west end slab and 9 inches below that of the uprights. The floor stone fitted remarkably closely along the edges of the uprights but its corners were irregularly rounded, leaving gaps through which I could put my fingers and feel that the slab rested lightly on the underlying till. All the uprights continued a little below the upper surface of the floor: the southern (which was pulled up) proved in fact to be 1 foot 3 inches high over more than half its length and 2 feet 2 inches high at its eastern end. The corners of the cist were plugged with small stones, but not luted with clay, and some till had worked in through the chinks. The cover stone, which was

¹ In the photographs Breuil thought he could recognise similar figures also in (d) and on the sloping rock surface of Pl. XCH, 2, but on re-examination the marks which he took for artificial seem to us to be probably flaws or weathering scars.

² Cf. Clark, *Proc. Prehistoric Society*, vol. i. (1935), p. 83 and fig. 10.

lying at the side of the field, was an irregular slab, very smooth on its lower face and 3.5 inches thick. What had been its western edge was almost straight and 2 feet 8 inches long; the eastern edge was irregular, but the stone's maximum width was 2 feet (Plate XCIII).

Mr Maenoughton found the Beaker urn lying on its side in the western part of the cist and recognised the skull near the east end. As I found a decayed long-bone (? leg bone) near the north-west corner, it would seem as if the urn must have lain upon or fallen over part of the skeleton.

The beaker of AC type is 8 inches high and 6½ inches at the mouth. The surface, lightly burnished, is a dirty buff, but the core, exposed by chips near the rim, is black. The surface is divided into zones by nine broad horizontal grooves or channels. The broad zones on the neck (between grooves 3 and 4), and the narrower zones on the shoulder (between grooves 5 and 6) and round the belly (between grooves 7 and 8) and a narrow zone below groove 9 are covered with punctuations, arranged irregularly and made with a rather blunt-pointed instrument, presumably of bone. These punctuations have been filled with a white paste, which survives in several. This unusual groove-and-dot decoration is combined with the "rouletted" ornament, made with a short-toothed comb-stamp, which is proper to beakers. Horizontal rouletted lines have been impressed in all the grooves save the uppermost (No. 1), evidently after they were scooped out. Below groove 6 there is a zone of 4 to 6 lines of rouletted impressions that frequently overlap. Finally, the basal zone below groove 9 bears a chevron pattern, formed of bundles of rouletted lines, and is bordered below by two irregular horizontal rouletted lines. The punctuations of the lowest belt had been inserted only after the chevron was completed and neither intersect nor are cut by the comb imprints. Hence, in decorating the beaker, the first step was to hollow out the grooves. The rouletted patterns were then inserted in and between the grooves. Finally, the alternate zones that were still blank were filled up with the punctured bands and encrusted with white paste.

V. G. CHILDE.

REPORT ON THE SKELETAL REMAINS.

This is a burial by inhumation of a child 3 to 5 years of age.

Of the skeleton there are pieces of bones of the skull parietal, occipital and frontal as well as 2 petrous bones; several imperfect vertebrae and ribs; shafts of the long bones of the limbs.

ALEX. LOW.

3. AN INDETERMINATE STRUCTURE AND A HEARTH FOUND OUTSIDE THE ROMAN FORT AT MUMRILLS.

The Structure.—In October, 1937, the plough brought to light a patch of cobble-stones, covered by clay, at a point about 160 yards east of the east rampart of the Antonine fort at Mumrills and close to the southern field-boundary, which also marks the southern edge of the easterly extension of the ridge on which the fort stood.¹ A little digging showed that the patch was artificial and similar in composition to the foundation of a Roman building. As it lay

¹ Earlier discoveries to the east of the fort are recorded in *Proceedings*, vol. xlix, pp. 118 ff., and vol. lxiii, p. 501. While the fort was being excavated, a number of exploratory trenches were cut eastwards along the plateau, but these yielded negative results; they were not continued, however, as far as the site of the structure.

only 6 inches below the surface and could be followed up easily, a considerable area was subsequently uncovered by the spade, disclosing traces of a building which had been erected mainly in wood, but partly also in stone. In this work I was occasionally assisted by Mr John Campbell and Mr Alexander Mann. Dr A. O. Curle, C.V.O., visited the site from time to time, when his wide experience as an excavator was of great help. For assistance in various ways I am also indebted to Sir George Macdonald, K.C.B., Mr A. J. H. Edwards, Mr D. Bursillie, Mr T. Douglas Wallace and Mr C. S. T. Calder.

The plan (fig. 1) records the results of the excavation in so far as it was possible to recover definite details. Obviously, it is incomplete.

The most substantial evidence obtained was provided by a series of short clay-and-cobble foundations, six in number, placed lengthwise and extending at short and somewhat irregular intervals in a row north and south, measuring fully 39 feet over all. Inter-connected with the three southerly foundations and stretching 16 feet further south was a line of post-holes, ten in number, measuring fully 38 feet between the posts at either end.

The foundations are lettered on the plan (fig. 1). But for a little irregularity in *a* and *b*, they were more or less rectangular in shape. They varied in length from 4 feet 6 inches to 3 feet 6 inches, and the breadth ranged between 3 feet 6 inches and 3 feet. As regards *a* and *b*, each was composed of a single layer of stones over which a layer of clay had been spread and beaten in, the resultant mass averaging about 7 inches in depth; but *c*, *d*, *e* and *f* were each composed of two layers, similarly laid and having an average depth of almost 1 foot.

The post-holes varied in width and in depth, the width ranging from 3 feet to 1 foot 9 inches, and the depth from 1 foot 2 inches to 3 feet 3 inches. Nothing remained of the posts themselves, but a little black matter was seen in the bottom of a few of the holes. All had been firmly packed with stones. The third and fourth—counting from the south end of the line—had been of special importance. In each of these cases a large flat stone had been laid in the bottom of the hole before the post was inserted, and clay had been beaten in with the packing-stones. The clay had kept the packing-stones in position after the posts perished so that, although the spaces which the latter had occupied were filled with soil, the size and shape of the posts themselves could be calculated. The third had been round and fully 1 foot in diameter—possibly the stoutest post in the line: the fourth had also been round, but its diameter had been only 7 inches. In some cases, where no clay was used, the packing-stones had subsided, but it was generally possible to gauge the thickness of the posts approximately. The smallest may have been only 4 inches in diameter, but 7 inches would perhaps be a fair average.

The alignment of post-holes and foundations was remarkable. The four southerly posts, which had stood clear of the foundations, had been in fairly good alignment, not only with each other, but also with the western sides of foundations *a*, *b*, *c* and *d*. But, from the fourth post the line deviated slightly eastwards so as to intersect foundations *a*, *b* and *c*. It will be noted that foundations *e* and *f* also deviate towards the east. The manner in which posts and foundations had been distributed was even more noteworthy. Beginning from the south end, and measured from centre to centre, the posts had been spaced as follows: 3 feet 6 inches; 4 feet 6 inches; 4 feet; 3 feet 6 inches; 5 feet 6 inches; 4 feet; 5 feet 6 inches; 2 feet; and, finally, 5 feet 6 inches. It might appear that the three recurring intervals of 5 feet 6 inches had been determined by the pre-existence of foundations *a*, *b* and *c*, but a close examination of the

whole line, in which Dr Curle took part, showed that, to all appearance, the post-holes had been dug and the posts inserted before the foundations were laid. The north ends of foundations *a* and *c* overlay the packing-stones in the adjacent

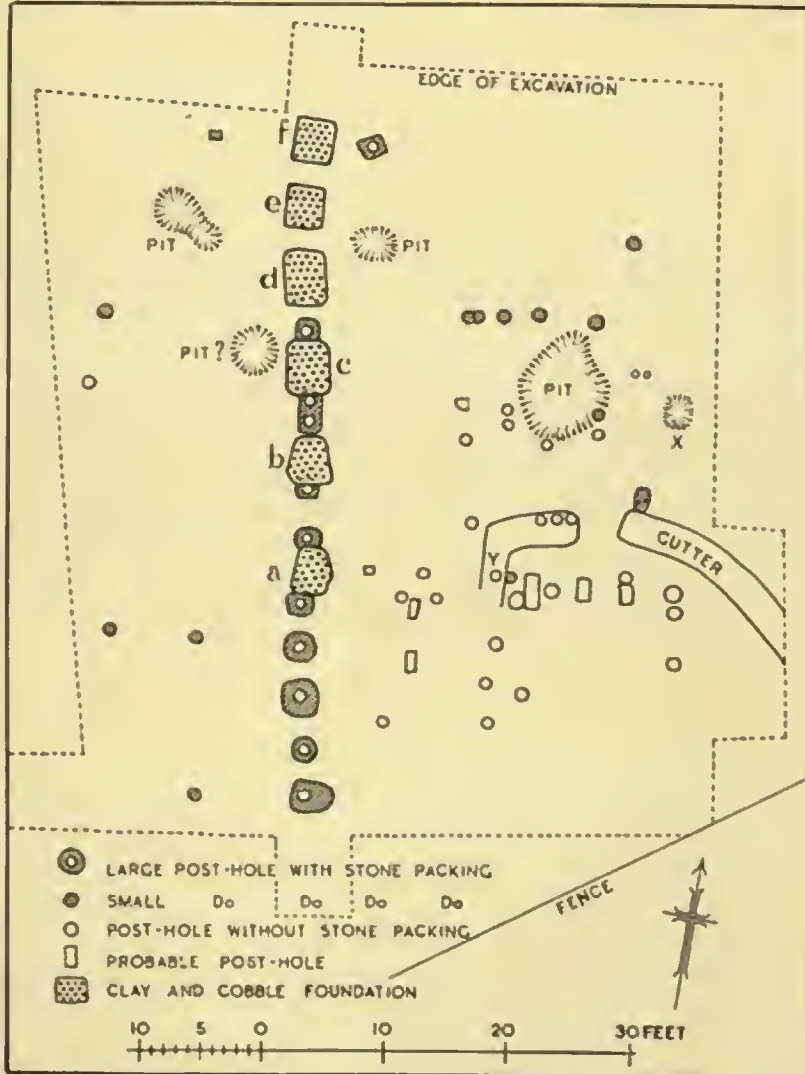


Fig. 1. Plan of Structure found outside the Roman Fort at Mumrills.

post-holes, and the south ends of *a*, *b* and *c* protruded in the same way. It will be observed that the space between the foundations was gradually reduced towards the north, and that between *e* and *f*, where there were no post-holes, the spacing, although shorter, was equal. The over-all measurement for the composite line was about 56 feet.

An area, 30 feet wide, on the east side of the line just described, yielded a

considerable number of smaller post-holes, the depth ranging from as little as 4 inches to 1 foot 6 inches. A number of the posts had been packed with small stones, but the majority merely with the gravelly soil of the site. In a few cases the exact shape of the various posts belonging to the latter class could be determined by the contrast between the light-coloured soil of the site and the darker coloured soil which occupied the position of the decayed wood. One had been of squared timber, measuring 6 inches by 4 inches, while another, shaped as a quadrant, had had a radius of 7 inches, clearly showing that some of the timber used had either been sawn or split by wedges. In addition to the ordinary post-holes, a number of shallow rectangular holes were noted.

The area to the east of foundation *f* was almost completely devoid of post-holes, and to the east of the most southerly post-hole, in the row of ten, matters were much worse, the site here having been so much disturbed by cultivation that, not only was there a complete absence of post-holes, but modern pottery was found below the floor-level of the building. Accordingly, it was only from a complicated series of post-holes, extending eastwards from foundation *a*, that any indication as to the width of the structure could be obtained. This line was 30 feet long. As nothing in the nature of a post-hole was found in a search through a distance of 10 feet further east, and, as the measurement of 30 feet agreed with another taken parallel to it, a little farther north, it was assumed that the eastern limit had been reached.

Parts of an oddly shaped gutter—as a few inches of water-borne silt which lay in the bottom of the western portion proved it to be—lay within the building in a manner obviously unfitting it to be of material service. It had no stone kerbing, being merely hollowed out of the natural soil to a depth ranging from 6 inches to 10 inches, the average width being about 2 feet 6 inches. Its two inner ends had been rounded off, leaving an undisturbed space, fully 3 feet wide, as a passage. It was found impossible to trace its course at either of its outer ends—at the eastern, because of recent disturbance of the soil, and, at the western, because of disturbance which (there is reason to suppose) had occurred when the building was erected. A small post-hole, marked *y* on the plan, was noted in the forced infilling of the gutter before the function of the latter was understood. Presumably, therefore, the gutter was earlier than the building. But, how much earlier? The small post-holes in the western half of what has been termed a complicated series of post-holes extending eastwards from foundation *a*, were distinctive as a class when compared with the much larger post-holes in the eastern half of the same line. These larger and deeper post-holes were all situated within the oddly diverging arms of the gutter, and when the general alignment of the holes is considered, a not unreasonable conjecture is that an earlier and smaller hut had been incorporated in the larger building. Possibly, as the plan suggests, there may have been a double row of small posts in the western half of the line. The three rectangular holes which lie with their long axes precisely athwart the line just suggested, may have been connected with a doorway. An undressed piece of sandstone, having a broad arrow-mark with a round hole at the point of the mark, lay at the north end of the central rectangular hole.

On the west side of the foundations a greater depth of surface soil made the recovery of post-holes a matter of uncertainty, and as only a few definite examples were found, the search was abandoned. A broad trench, cut westwards from the most southerly post-hole for a distance of 35 feet, revealed only a single post-hole. It is thus quite doubtful whether the building extended farther west or not.

A few pits, ranging from 1 foot 4 inches to fully 2 feet in depth, were discovered, but these contained nothing of importance. The circular pit near foundation c may have been either a pit or a post-hole, and the pit marked x on the plan is in the same ambiguous position. The floor was composed mainly of the compacted natural subsoil, which is of sand or gravel. In the region to the east of the third and fourth post-holes in the row of ten, it appeared to have been "made up" and a thin coating of gravel spread as a surface. Farther east, within the supposed early hut, was a patch of compacted clay, with which was mixed a considerable quantity of coal dust.¹ The latter element, however, did not appear to have been burned.

The pottery found consisted for the most part of comparatively modern earthenware, the field having been dressed with city refuse by a previous tenant. However, a few pieces of coarse-grained native ware were recovered from the gutter. Dr Curle and Mr Edwards compare these with some sherds from Traprain Law. A flat stone disc, about $\frac{1}{4}$ inch thick, with a diameter of 2 $\frac{1}{4}$ inches and having a small hole drilled through the centre, was turned up while the excavation was being filled in. No Roman pottery was found. But, amongst the packing-stones and in the clay foundations numerous fragments of dressed sandstone bearing unmistakable marks of Roman workmanship were mixed up indiscriminately with natural waterworn stones. The upper half of a Roman votive altar² was found lying face downwards in the most southerly post-hole—the first in the row of ten. Close beside it was a fragment of a sculptured stone with two protuberances on one face. A fragment of the drum of an engaged half column, 12 inches in diameter, was recovered from foundation a. On one surface is a wedge-shaped dowel-hole near the centre, measuring 3 inches long, 1 inch wide, and 2 inches deep. Another fragment of a column drum, but with a smaller radius, 3 $\frac{1}{4}$ inches, and without a dowel-hole, was found in the third post-hole. Between the eighth and ninth was a longish stone, much burnt, which had at one time done service either as a hypocaust pillar or in the cheek of a furnace. There were many other small bits of sandstone, smashed beyond recognition. A few, bearing impressions of fossilised plants, were also noted. Mr D. Balsillie, of the Royal Scottish Museum, who kindly examined these, points out that the local rocks belong to the "coal measures."

Perhaps enough has been said to indicate the character of the building. What of its date? The occurrence of modern pottery below floor-level, as well as the absence of post-holes in the area at the south-east corner of the site, might be explained as being the result of a gradual denudation of the edge of the ridge by ploughing and harrowing, before a boundary fence was erected, and, on a plan dated 1816, preserved in the Callendar Estate Office, no boundary is shown. Since a fence has been put up, soil and modern pottery from further north appear to have been carried towards the edge of the field. But a piece

¹ This mixture of clay and coal, although occurring in the floor of the hut, was in all probability a natural deposit. A circular pocket, 3 feet wide and 3 feet deep, full of coarse gravel mingled with coal dress was also discovered on the site. Its dimensions, combined with the contrast between its contents and their surroundings, suggested that it might once have held a post. More careful examination compelled the rejection of the idea. It seems desirable to put this on record, since it is not always realized that similar features, of purely natural origin, may be encountered in sandy moraines. A striking example came under my own observation recently in a sand-pit at Belmont, Falkirk, where I noted quite a number of such pockets, including one which was no less than 7 feet beneath the surface and was covered by 3 or 4 feet of bedded sand.

² For a description see *supra*, p. 246.

of this modern ware, found *in situ*, 5 inches below floor-level in the post-hole or pit marked *x*, is more difficult to account for. Another piece, unfortunately disturbed, came to light when foundation *e* was being examined in order to find out whether or not a post-hole lurked beneath. Had it not been for these small pieces of modern ware, a Roman origin for the building might have been fairly confidently claimed. It is unlikely that Roman altars were lying around available to break up as packing for the posts as late as the nineteenth century, which date Mr Curle tentatively suggests for the minute piece of modern earthenware found in foundation *e*. But as—so far as the writer's knowledge goes—there is no comparable structure in connection with other Roman forts, it may be wise, for the present at least, to suspend judgment.

It seems improbable that the remains indicate a wooden building succeeded by one of stone. The alignment and distribution of the line of ten posts suggests that, from the most southerly of them, as far as and including foundation *e*, the building was the result of a preconceived plan. The similarity in the nature of the fragments found in post-holes and foundations, although perhaps not conclusive, goes to support this view. It is just possible, however, that foundations *d*, *e* and *f*, with the necessary woodwork on either side, were added later as an extension.

The Hearth—To the ploughshare also may be attributed the discovery of a large flat stone, evidently connected with a hearth, at a point roughly 35 yards west-north-west from the building. This stone measures 2 feet 7 inches in length, 2 feet in breadth, and 7½ inches in thickness. When found, it was lying slightly tilted, one corner of its upper side being barely 6 inches below field surface. It was resting on a few smaller stones, two of which were Roman building-stones, but only one stone—one of the latter pair—appeared to be *in situ*. This lay on the edge of a small hollow scooped out of the natural soil, which, in addition to the small stones already mentioned, contained a mixture of soil and soot, about 10 inches in depth, measured in the centre of the hollow. That intense heat had been generated was evident, for the natural soil in the bottom of the hollow, as well as the under side of the large flat stone, were burnt brick-red. A piece of scoria, which Dr Curle thinks may have come from the tuyère of a bellows, was found among the sooty soil. While the upper side of the large stone was chisel-dressed in the ordinary way, the tool marking on the under side formed a kilted pattern. A square hole, about 1 inch each way, had been cut near one of the edges—evidently for a metal clasp. All the chiselling had been done before the stone was subjected to fire, indicating that its use in the hearth was secondary.

The relics found during the excavation have been presented to the Museum by Mr Charles W. Forbes of Callendar. SAMUEL SMITH.

4. OAK PANELS PRESENTED TO THE MUSEUM BY THE NATIONAL ART COLLECTIONS FUND.

The section of Oak Wall Panelling shown in Pl. XCV formed part of the furnishings of the Castle of Killochan, near Girvan, Ayrshire. The principal features are four portrait busts of a bearded man and his lady, a young man and a young woman. Each of these occupies the upper part of a panel, the lower part being embellished with vase, floral spray, and dolphinesque enrichments of Francois 1^{er} character. The figures are portrayed in mid-sixteenth century costume; the heads are in relief, and each figure holds a flowing ribbon

label which is effectively disposed on the background. These carvings, once coloured in polychrome, probably date from between 1530-1540 and belong to a class of ornamentation in vogue during the reign of James V., when Sir James Hamilton of Finnart, the Bastard of Arran, was King's Master of Works. Hamilton had spent his early years in France, at the Court of Francois Ist, and has been credited with introducing the carved oak medallion ceiling which, until 1777, adorned the Presence Room at the Castle of Stirling. It is possible that the portraits on the Killochan panels represent members of the family of Cathcart, and the younger man represented may be John Cathcart who built additions to the Castle in 1586. The framework, measuring 6 feet 3 inches in height and 10 feet 3 inches in length, was constructed along with an inscribed heraldic panel in 1606. The date appears below the shield bearing the arms of Cathcart impaled with Wallace. Above is the inscription IHONE · CATHCART · OF · CARLTOVNE · AND · HELENE · WALLACE · HIS · SPOVSE ·. Few examples of Scottish sixteenth-century wood carvings are in existence, and this particular example, which is of the first order of craftsmanship, is a very important acquisition to the National Collection.

The Montrose Panels (Pl. XCVI) consist of eighteen carved oak panels set in two rows within a framework of carved and moulded muntins and rails. In style the work belongs to the late Gothic Period; the character is Scottish, and it is the best example of its particular kind left in the country. One panel bears a reticulated pattern, and the rest are decorated in low relief with various designs in a mannered style. Some represent conventionalised vine and grape motifs, others oak branch and acorn, while the floral compositions include rose and campanula panels, and a thistle panel. On the oak branch panels birds are depicted perching on the stems and pecking at the fruit, and in one of them there are two swine at the base. Two panels contain, in their lower arrangement, satirical episodes in which foxes are represented as friars. One group shows two of these beasts habited in hooded cloaks, each holding a staff and walking in procession. Another depicts two foxes, in cloaks, holding a goose up between them, and their staves raised saltirewise. The central panel of the top row is decorated with an oak branch, between the upper leaves of which is set a shield bearing the arms of the family of Panter or Paniter, once of Newmanswalls, near Montrose.

It is probable that this work is the remains of dais panelling which once adorned the hall of a hospital founded in 1516 by Patrick Panter, Bishop of Ross and Abbot of Cambuskenneth, who was of the Newmanswalls family. This Bishop was chief Secretary to James IV. and, after the King's death at Flodden, a trusted adviser to Queen Margaret. He died in Paris in 1519. About 1878 the woodwork was recovered during the demolition of a house in Montrose.

The panels, which measure 10 feet 6½ inches in length and 4 feet 6½ inches in height, were described in vol. xvi. p. 61 of the *Proceedings*, but have been arranged differently since.

JAMES S. RICHARDSON, *Curator*.

5. JET NECKLACE FROM A CIST IN STRATHNAVER.

The discovery of parts of a jet necklace was reported in the beginning of February 1938 by Mr J. Robertson, M.Inst.M. and C.E., County Surveyor of Sutherland, through the late Sir Alfred N. Macaulay.

According to Mr Robertson's report a mound was being removed for road material some 30 yards west of the Strathnaver road on the hillside sloping

eastward down to the confluence of the River Naver and the Acheheargary Burn about 2 miles south of Apigill Junction. About the middle of the mound, which was not very clearly defined, was a short cist with a very irregular but somewhat pear-shaped coverstone, 4 feet 2 inches by 2 feet 9 inches in major dimensions and varying in thickness from 6 to 8 inches. The cist was 1 foot 3 inches deep and its internal dimensions 2 feet 8 inches by 1 foot 8 inches, while the four side-slabs were about 4 inches thick, the orientation of the long axis being about 72° E. magnetic. About 3 yards from this cist were traces of another grave of the same type, which must have been broken into a long time ago. There is yet another mound a few yards to the north. By riddling the material thrown out a large part of the necklace and a jet button were recovered.

The remains of the jet necklace (Pl. XCVII) consist of (a) two triangular terminal plates ($1\frac{1}{2}$ inch by $\frac{1}{2}$ inch), the face decorated with punctulated triangles and having four string-holes at the short end, issuing on to the back after $\frac{1}{4}$ inch, each plate having a hole through the apex, the sinister plate from side to side and the dexter from back to front; (b) two pairs of trapezoidal plates ($1\frac{1}{2}$ inch by $\frac{3}{4}$ inch and $2\frac{1}{4}$ inches by $\frac{1}{2}$ inch) with the string-holes increasing from four to five, one of the five issuing on to the back in the case of the sinister plate, and from five to eight, three of the eight issuing on to the back in the case of the dexter plate, and six of the eight and three of the five in the case of the sinister plate; the ornamentation on the face consists of punctulated triangles forming two reserved vertical zigzags with a bar in between; (c) sixty-four barrel-shaped beads of varying size; (d) two beads with somewhat straighter sides and sub-rectangular cross-section, on one of which are a few punctulations, forming a simple pattern.

The jet button is V-perforated and is 1 inch in diameter. The necklace and button have been generously presented to the National Collection by Mr Walter Midwood, Calvailey Hall, Tarporley, Cheshire.

R. B. K. STEVENSON, *Keeper*.

6. A MASSIVE DOUBLE-LINKED SILVER CHAIN.

A massive double-linked Silver Chain (Pl. XCVIII, 1) of the Early Christian Period was found at Traprain Law in January 1938. The discovery was made by one of the workmen, when tiring the soil at the north-east end, near the quarry, between the 600 and 700 feet contour lines.

The chain, which was only about 2 feet from the surface and in a good state of preservation, consists of 19 pairs of circular rings, with a single ring at one end. Each one of the pairs measures $1\frac{1}{2}$ inch in diameter, and $\frac{5}{16}$ inch in thickness. The inner side of the rings, where they touch, is flattened, but the single ring at the end is plain and slightly larger than the paired rings, being $1\frac{1}{2}$ inch in diameter and $\frac{1}{2}$ inch in thickness. The chain weighs 53 oz. 15 dwt., and measures $16\frac{1}{2}$ inches in length.

There are now six examples¹ of such chains in the Museum—two from East Lothian (Traprain Law and Haddington), one from Berwickshire (Whitlaw, near Lauder), one from Lanarkshire (Whiteclench, Crawfordjohn), one from Aberdeenshire (Parkhill, New Machar), and one from Inverness-shire (Caledonian Canal). Four more are known—two from Berwickshire (Greenlaw²

¹ For detailed information, see *Proceedings*, vol. x, pp. 321-317; vol. xv, pp. 64-70; vol. xxix, pp. 209, 210.

² Sir George Macdonald very kindly informed me of a reference in Pococke's *Tours in Scotland*, p. 350, Scottish History Society, vol. I., to a silver chain having been found near Home Castle. This

(Pl. XCVIII, 2) and Hordwheel on Lannermuir), one from Peeblesshire (West Linton?) not previously recorded,¹ and a portion of another from Nigg, Kincardine, which was presented to Aberdeen University in 1796.² The Nigg chain consists of three pairs of double links, with a single link at either end. All the links are flattened on one side, and measure $1\frac{5}{8}$ inch in diameter and $\frac{3}{8}$ inch in thickness.

Seven of the ten chains have come from the south of Scotland, but whether this has any special significance is not known. When complete, they all seem to have been of the same length and pattern. A complete chain would therefore have a single ring at one extremity and a penannular papkin-ring terminal at the other, through the open part of which the single ring would easily slip. The chain thus looped together would lie comfortably round the neck, and the suggestion that they were collars, which was made by Dr Joseph Anderson many years ago, has not been improved upon.

Occasionally the penannular terminal bears one or more of the symbols which are specially characteristic of the sculptured stone monuments of Scotland, and mainly of those in its eastern portion, north of the Forth. It is known that many of them were carved in Early Christian times, because they have been found on slabs bearing crosses and other sculpturings in relief, which have been derived from the "Bestiaries" or Early Christian symbolism. A tentative date for the chains would probably be from the sixth to eighth century A.D.

A. J. H. EDWARDS, *Director*.

7. THREE PENANNULAR ARMLETS AND TWO FINGER-RINGS OF SILVER.

The Viking Armbands and Finger-rings shown on Pl. XCIX were found under 5 feet of peat in the moss of Dhibadail, Ness, Parish of Barvas, Stornoway, in February 1939. The armbands are bent to an elongated oval, and taper slightly towards the extremities, which are flattened. They are quadrangular in section and measure $2\frac{3}{8}$ inches, $2\frac{1}{4}$ inches, and $2\frac{1}{8}$ inches in the long diameter.

The finger-rings, one of which is broken and much worn, are plano-convex in section, and measure $\frac{3}{8}$ inch and $\frac{7}{8}$ inch in diameter respectively.

Unornamented silver penannular armbands found in Viking Hoards vary somewhat in shape. Those, like the examples from Stornoway, that are quadrangular in cross-section and flattened at the ends, are the most finished in appearance.

Others with round cross-sections also have flattened ends. Many are less carefully finished, having round or roughly polygonal cross-sections and blunt ends. Of the four different finds listed by Anderson,³ the Skull Hoard has some twenty-six rings, besides numerous fragments, of which many look unfinished and none have flattened ends. Each of the other three small groups contains rings with flattened ends. Three subsequent finds, now in the Museum, include the Burray Hoard⁴ with thirty rings and many fragments, of which rather less than half are flattened.

The objects were probably the personal ornaments of some individual, and belong to about the tenth century A.D.

A. J. H. EDWARDS, *Director*.

record evidently refers to the chain found at Greenlaw, a detailed account of which is given in *Proceedings*, vol. x, p. 327.

¹ It has not been found possible to obtain a description of the chain.

² I am indebted to Dr W. Douglas Simpson and the Curator of Aberdeen University Museum for informing me of this new record.

³ *Proceedings*, vol. x, pp. 583-586.

⁴ *Ibid.*, vol. xxiii, pp. 318-322.

DONATIONS TO AND PURCHASES FOR THE MUSEUM.

From May to December 1938 Donations.

(1) Relics from cairns on Eday and Calf of Eday, Orkney (see vol. lxxii. pp. 193-216). Presented by Major HARRY H. HEBDEN, M.C., Eday, Orkney.

(2) Peat Spade of pinewood, found at a depth of 8 feet while digging the foundations of the Power House of the British Aluminium Company at Fort William. Presented by ROBERT C. MACARTHUR, 22 Broomside Terrace, Edinburgh.

(3) Cross Head of blue slate, incomplete, 9 inches by $9\frac{1}{4}$ inches, bearing a figure of the Crucifixion rudely carved, from Iona. Presented by WILLIAM WALKER, Mount Devon House, Dollar.

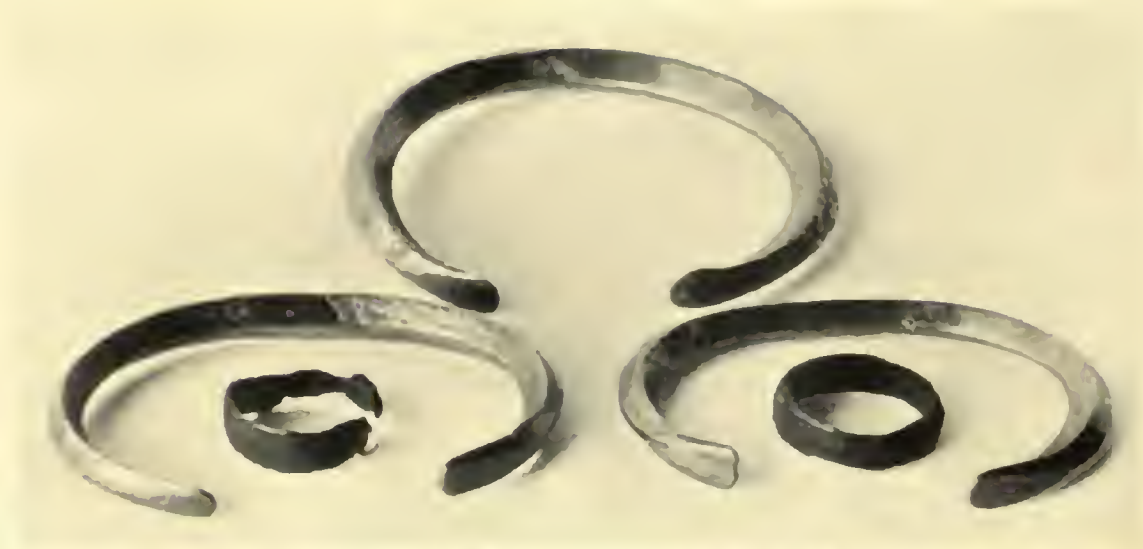
(4) Four Cinerary Urns: fig. 1 (1) of light red clay, 12 inches in height, encircled by a raised moulding $4\frac{1}{4}$ inches below the rim; fig. 1 (2) of encrusted type made of yellow-brown clay, $16\frac{1}{2}$ inches in height; the neck is concave and divided into two parts by a raised moulding, the upper part consisting of rectangular panels separated by vertical bars, and the lower having a chevron decoration; fig. 1 (3) of encrusted type and made of yellowish brown clay, $17\frac{1}{4}$ inches in height; fig. 1 (4) of brown clay, base wanting, $13\frac{3}{4}$ inches in diameter at the mouth—all from the Hill of Foulzie, King Edward, Aberdeenshire. (See also *Transactions of the Banffshire Field Club*, 1901-1902, pp. 33-45.) Presented by THE TOWN COUNCIL OF BANFF.

(5) Flag of the Chiefs of Clan Macfarlane. The flag, of cream-coloured silk, measures 6 feet 8 inches by 5 feet 9 inches. In the centre is the painted figure of a naked man with curling hair, beard, and moustache, standing on a crested wreath. In the right hand he grasps a sheaf of arrows, the left rests on his thigh. Above is an escroll with tasselled ends and the motto "THIS I'LL DEFEND." In the upper right-hand corner is a St Andrew's Cross in blue silk, and below, on the right, a crown. The flag was at Arrochar House, Loch Long, Dunbartonshire, till about 1784, when the estates were sold by William, 22nd Chief of the Clan. Presented by The Rev. ANDREW MACFARLANE, D.D., 17 Lockhart Avenue, Edinburgh.

(6) Whetstone of jasper $3\frac{5}{8}$ inches by $1\frac{5}{8}$ inch by $1\frac{3}{8}$ inch. Found at Ardelve, Lochalsh. Presented by Dr J. J. GALBRAITH, F.S.A.Scot.

(7) Hand Turnip Cutter. Presented by A. M. COWIE, M.B., C.M., F.S.A.Scot.

(8) Bible Box, having inside the lid the following inscription: "This is made of part of the oak belonging to the Palace and Church of Mary of Guise, erected on The Castle Hill, Edinburgh, in 1541 and broken down



Armlets and Finger-Rings of Silver from Dhibadall moss, Harva, Stornoway. (1.)

PLATE XCIX.

[To face page 328.



1. Socketed Bronze Axe
from near Troon. (1.)



2. Bone Plaque, late sixteenth
century. (1.)



4. Scottish Claymore,
early sixteenth century.



3. Food-vessel *Uru* from Meigle, Perthshire. (1.)

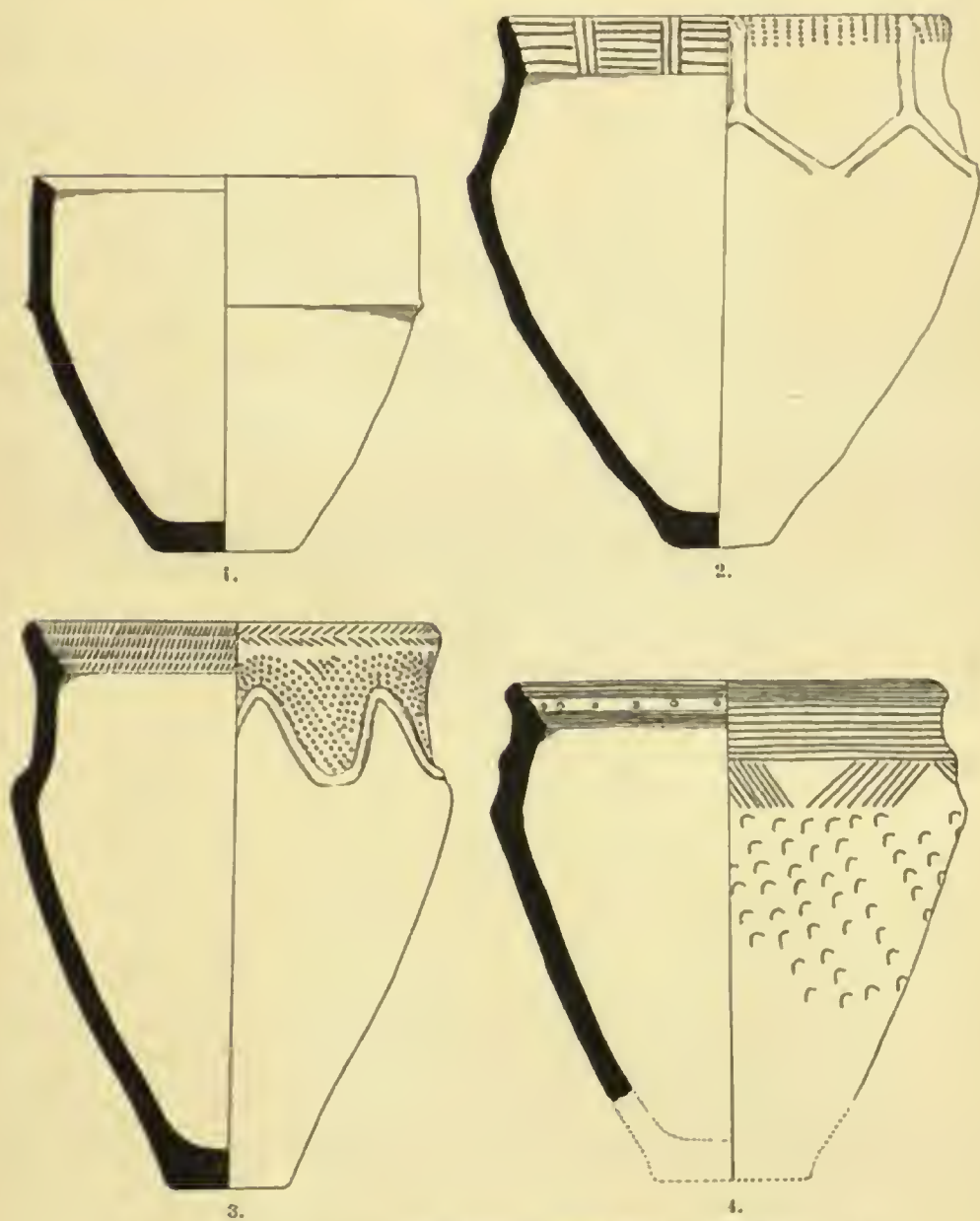


Fig. 1. Clunary Urn from Hill of Foulzie, King Edward, Aberdeenshire. (1.)

in 1845. The Right Hon. Adam Black, M.P., Lord Provost." Presented by Messrs A. & C. BLACK, LTD., 4-6 Soho Square, London.

(9) Iron-bound Box of Oak with three locks, numbered 1, 2, and 3, measuring 1 foot $6\frac{3}{4}$ inches by 10 inches by 10 inches, from Cnpar, Fife. Presented by CHARLES WELCH, Cnpar, Fife.

(10) Iron Pot Suspender, with hook and chain. Presented by JAMES S. RICHARDSON, F.S.A.Scot.

(11) Cream Coggie with four handles, from Grange, Banffshire. Presented by H. NEAVES, 14 Inglis Road, Invergordon, Ross-shire.

(12) Six hundred and nineteen Communion Tokens, from the collection of the late R. McVitie, Edinburgh. Presented by his daughter, Mrs F. WESTON, Whitelea, Selborne Road, Croydon, Surrey.

(13) Button Mould of clay slate, measuring 3 inches by $1\frac{1}{8}$ inch by $1\frac{3}{16}$ inch, having two circular matrices on one face, one of which bears the letters A C. The other three faces bear, respectively, a rudely incised cross, a roughly carved heart, and a bored hole. Presented by SIMON BREMNER, Corresponding Member.

(14) Beaker Urn, found in a cist at Thornton, Innerwick, East Lothian (see Note on p. 318). Presented by THE DEPARTMENT OF AGRICULTURE FOR SCOTLAND.

(15) Graver of jasper, from the main midden, Gullane Links. Presented by R. A. MILNE, 37 Springvalley Terrace, Edinburgh.

(16) Fragment of a carinated undecorated vessel of dark brown clay and "Neolithic" aspect, $\frac{1}{2}$ inch in thickness, pierced with a small hole $\frac{5}{8}$ inch below the carination; three fragments of a vessel of dark brown stentitic clay bearing finger-nail impressions; scraper of dark yellow flint and fragments of large vessel of stentitic clay, from the Beni or "Bunyie Hoose," Pettigarthsfield, Whalsay, Shetland. Fragments of a vessel of dark brown clay, showing marks of grass tempering, from Vatsford, Traewick, Whalsay. Presented by JOHN STEWART, 146 Seafield Road, Aberdeen.

(17) Section of Oak Wall Panelling, from the Castle of Killochan, near Girvan, Ayrshire (see Note on p. 324). Scottish Claymore or Two-handed Sword of the late fifteenth or early sixteenth century (Plate C, 4). This is probably the earliest surviving example of its kind, since the pommel is still of the mediæval type. It has drooping quillons which terminate in quatrefoils of open circles, and the handle has the distinction of having retained its original leather grip. The total length of the sword is 4 feet $10\frac{1}{2}$ inches, the blade being 3 feet 8 inches. Presented by THE NATIONAL ART COLLECTIONS FUND, purchased out of the "London Scot" bequest.

(18) Borer of grey flint found in a garden at Netherview Road, Renfrewshire. Presented by R. McALLISTER, 14 Netherview Road, Notherlee, Glasgow.

(19) Whetstone of quartzite found on Dunphail Estate, Morayshire. Presented by THOMAS SKINNER, Inverness.

(20) Pointed cylindrical club-like Stone, with handle, found at Bixter, Shetland. Presented by ROBERT SMITH, Scalloway, Shetland.

(21) Advocate's Gown worn by Sir Walter Scott. Presented by W. G. AITCHISON ROBERTSON, M.D., D.Sc., F.R.C.P.E., F.S.A.Scot.

(22) Circular Bone Plaque (Pl. C, 2) having on one side an incised drawing of a man, habited in late sixteenth-century costume, seated on a galloping horse. Found at Salamander Street, Leith, about 8 feet below the surface. Presented by R. CRAWFORD, Craigview, Kinellan Road, Edinburgh.

Purchases.

Hair Shackle for sheep, from Shetland.

Socketed Bronze Axe (Pl. C, 1), $2\frac{7}{8}$ inches long and $1\frac{3}{4}$ inch across the cutting edge. Found between Loans and Troon, at the Muirhead Housing Scheme.

Food-vessel Urn of light red clay (Pl. C, 3), measuring $5\frac{1}{4}$ inches in height, 6 inches in external diameter at the mouth, 6 inches at the shoulder, and 3 inches at the base. The upper part of the vessel is decorated with a double row of impressions made by a pointed implement; the shoulder is bordered above and below by parallel lines and is ornamented partly by the impressions of a triangular point, and partly by the edge of a flat tool, the lower part of the body being filled with a herring-bone band made by a rectangular stamp. Found in a short cist with the skeleton of a young woman, near Belmont Castle, Meigle, Perthshire, in 1859.

January 1939.

Donations.

(1) Cinerary Urn, together with part of a flint knife, a bone object, and urn of unusual form, found together in an old gravel pit at Outerston Hill, near Temple, Midlothian. (See communication by R. B. K. Stevenson, p. 229.) Presented by THE TRUSTEES OF THE ARNISTON ESTATE.

February 1939.

Donations.

(1) The Montrose Panels, being eighteen carved oak panels as described in Note by J. S. Richardson, p. 325. Presented by THE NATIONAL ART COLLECTIONS FUND through the "London Scot" Bequest.

(2) Model of Mould for a socketed bronze axe. Presented by ALEXANDER O. CURLE, C.V.O., LL.D., F.S.A.Scot.

(3) Matrix of a Seal, of Bloodstone, mounted in a wooden handle, bearing the coats of Mcdonald of Clauranald and Stewart of Allanton, borne *per pale*, presumably the arms of husband and wife. The seal may

have belonged to Reginald Macdonald, M.P., who matriculated his arms as Chief in 1810. Presented by THOMAS YULE, W.S., F.S.A.Scot.

(4) Eight Worked Flints, from north site on Blackdown, Sussex. Presented by Miss PHOEBE A. M. KEEF, F.S.A.Scot.

(5) Beaker Urn, found in a cist with two skeletons at West (Little) Pinkerton, Dunbar, East Lothian. (See communication by R. B. K. Stevenson, p. 231.) Presented by HIS GRACE THE DUKE OF ROXBURGHE.

(6) Fragment of a Cinerary Urn, $8\frac{1}{2}$ inches by 6 inches, diameter at mouth about 12 inches. The portion shows the remains of two cordons and linear decoration in impressed cord. Found in Berwickshire. Presented by J. C. SCOTT, Broomlands, Kelso.

(7) Barbed Point of Deer Antler from Shewalton Moor, Ayrshire. (See communication by A. D. Lacaille, p. 48.) Presented by W. A. ABERCROMBIE, jun., 8 Scott Road, Irvine.

Purchases.

From the Cree Collection:—

Relics from two early Bronze Age Kitchen Middens at Tusculum, North Berwick, consisting of the fragments of beaker urns, flints, etc., described in *Proceedings*, vol. xlii. pp. 253-294.

Four Saws of brownish grey flint, from Greenlawdean, Greenlaw, Berwickshire.

Borer of dark grey flint, $1\frac{3}{16}$ inch long, maximum breadth $1\frac{1}{4}$ inch, from Craigsford, Earlston, Berwickshire.

Flint Arrowheads: (1) transverse, of white patinated flint; (2) lop-sided, dark brown; (3) ogival, white, patinated, tanged, with barbs; (4) white, patinated, $\frac{3}{4}$ inch by $1\frac{1}{4}$ inch, barbed, with long tang. From sandy ravines east of Muirfield, East Lothian.

Food-vessel Urn, from Cadder, Lanarkshire. (See *Proceedings*, vol. lxii. p. 230.)

Portion of a leaf-shaped Bronze Spear-head with loop on socket, length $3\frac{3}{4}$ inches, maximum breadth $1\frac{3}{4}$ inch, thickness at mid-rib $\frac{3}{4}$ inch, locality unknown.

Leaf-shaped Sword of Bronze, the hilt-plate and point broken away. From the hoard found at Grosvenor Crescent, Edinburgh. (See *Proceedings*, vol. xiii. p. 320 and vol. lxi. p. 45.)

Half of a dome-shaped Pin-head of Jet, height $\frac{15}{16}$ inch, breadth $1\frac{1}{8}$ inch, depth of perforation $\frac{3}{8}$ inch; Pebble of Jet, with hollow on each of the flat sides, $1\frac{3}{16}$ inch by $\frac{13}{16}$ inch by $\frac{7}{16}$ inch; Bead, roughly cubical, of opaque light blue glass, the perforation being larger at one end than at the other; Bead, flattened biconical, of translucent dark green glass, $\frac{3}{16}$ inch in diameter; fragment of Roman blue-green bottle glass. Found on Traprain Law, April 1910.

Bone Pin with crutch-head which has been broken and retrimmed, length $3\frac{9}{16}$ inches. From the Kitchen Midden adjoining a hut-circle near Ackergill Tower, Wick, Caithness. (See *Proceedings*, vol. xlv. p. 181.)

Two Carved Stone Balls: (1) with 80 knobs, diameter $2\frac{5}{8}$ inches, found in the moss at Newmills, Elgin; (2) with 6 knobs, $2\frac{1}{8}$ inches in diameter, locality unknown.

Whistle, made of brass tube, $5\frac{1}{2}$ inches long, external diameter $\frac{1}{4}$ inch, having six finger-holes, and being cut back at the mouth, from Medieval Floor, Tusculum, North Berwick. (See *Proceedings*, vol. xlii. p. 254.)

Hawk's Hood of leather.

Two Beggars' Badges of lead: (1) circular, having four loops, equidistant, in centre a ship sailing left, in relief, and below "34," incised, diameter $2\frac{1}{8}$ inches (Kirkwall); (2) heart-shaped, $2\frac{1}{8}$ inches by $2\frac{1}{2}$ inches, with a hole in each of the top corners, "DRUMAU" embossed in relief across the centre, 1773 incised above, and below 7.

Three Penannular Armlets and two Finger-rings of Silver, found under 5 feet of peat in the moss of Dhibadail, Ness, Parish of Barvas, Stornoway. (See Note by Director on p. 327.) Acquired through THE KING'S AND LORD TREASURER'S REMEMBRANCE.

March 1939.

Donations.

(1) Fragment of a Cross-slab of yellow Sandstone, 17 inches broad, 3 inches thick, 14 inches long. On the front is the upper part of a cross-head, in relief, containing three equal armed crosses sunk to the general plane of the slab; there was probably a fourth near the head of the shaft. On the back there is a moulding, in relief, along each side, and, in the centre, a strip, $4\frac{3}{4}$ inches wide, with a diagonal J key-pattern incised. Found in digging a grave in Tarbat Kirkyard, Portmahomack, Ross-shire, at a depth of 6 feet—the greater part of the slab is still in the grave, under the coffin. Presented by J. D. ROSS, Portmahomack.

(2) Jet Necklace, found in a stone cist near Acheheargary Burn, Parish of Farr, Strathnaver, Sutherland, as described in Note on p. 325. Presented by W. MIDWOOD, Calvaley Hall, Tarporley, Cheshire.

(3) Bronze Spear-head, found in River Avon, near Inverlochy, Strathavon, Tomintoul, Banffshire. Presented by Major W. H. DOIG, Gordon Street, Elgin.

Massive Silver Chain, consisting of nineteen pairs of circular rings, with a single ring at one end, found on Traprain Law (see Note on p. 326). Acquired through THE KING'S AND LORD TREASURER'S REMEMBRANCE.

April 1939.

Donations.

(1) Stone Axe, found at Benneccarrigan, Arran. Presented by Rev. WILLIAM EDGAR, B.A., B.D., Ph.D., F.S.A.Scot.

(2) Drinking-horn with whistle at lower end, used as a snuff-mull; Cream-skimmer of horn; two Candle Moulds of pewter, from Kirkwall, Orkney. Presented by JAMES S. RICHARDSON, F.S.A.Scot.

(3) Oval Badge of Brass of the Canongate. Presented by Major F. KENNEDY, The Manor, Kingston St Mary, Tamton.

(4) Silver-mounted Charm-stone of rock crystal. Formerly in the possession of Mrs Gibson, Bankhead House, Forfar. (See *Proceedings*, vol. xxix. p. 413.) Presented by WILLIAM and MANDY GIBSON, 10 Belgrave Avenue, Victoria Park, Manchester, 14.

(5) Knife and Two-pronged Fork which belonged to a great-granduncle of the donor (a Macdonald), who was out in the '45 and fought at Culloden. Presented by Mrs AGNES EDMONSTON, Redcrae, 2 Kilgraston Road, Edinburgh.

May 1939.

Donations.

(1) Six Implements of flint and one of chert, from Airhouse, Lauderdale, Berwickshire. Presented by JOHN R. FORTUNE, Corresponding Member.

(2) Crucifix of cast lead, found in the drain below the Frater Sub-croft at the Abbey of Dunfermline. Crossraguel Penny and two French Jettons, found in the west corner of the Frater Sub-croft, Dunfermline Abbey. Crossraguel Penny and Nuremberg Jetton from Melrose Abbey, and a Crossraguel Penny found in the Palace Gardens of Holyroodhouse. Copper Trade Token found at Dumbarton Castle. Presented by THE COMMISSIONERS OF HIS MAJESTY'S WORKS.

(3) Lop-sided Flint Arrowhead, found on Gullane sand dunes, near Eldbottle Wood, and portion of a clay Mould found beside fragments of a cinerary urn on Gullane Sands. Presented by ADAM T. RICHARDSON, 7 Tantallon Terrace, North Berwick.

(4) Collection of relics from a Fort at Castlelaw, Midlothian. (See *Proceedings*, vol. lxvii. p. 362.) Presented by Mrs DUNDAS, Woodhouselee.

(5) Relics from Taiverso Thiek, Ronsay, Orkney, recovered during excavations by the Commissioners of His Majesty's Works. (See *Proceedings*, vol. lxxiii. p. 155.) Zoomorphic Penannular Brooch and two whole and two half links of a small Bronze Chain, found during ploughing at the North Howe, Ronsay, Orkney. Relics from a Stone Age Settlement at the Braes of Rinyo, Orkney. (See *Proceedings*, vol. lxxiii. p. 6 ff.) Presented by WALTER G. GRANT, F.S.A.Scot.

(6) Relics from the Stone Circle and Bronze Age Cemetery at Loanhead of Daviot, recovered during excavations by the Commissioners of His Majesty's Works. (See *Proceedings*, vol. lxix. p. 168, and vol. lxx. p. 278.) Presented by Commander SETON.

(7) Two Wine Glasses and a Half-hour Glass which belonged to Sir Walter Scott. Presented by Dr W. G. AITCHISON ROBERTSON, F.S.A.Scot.

DONATIONS TO AND PURCHASES FOR THE LIBRARY. 335

(8) Relics found during excavations on the Roman Fort at Mumrills. (See *Proceedings*, vol. lxxiii. p. 245.) Presented by CHARLES W. FORBES of Callendar.

(9) Relics found during excavation of Iron Age Dwellings on the Calf of Eday, Orkney. (See *Proceedings*, vol. lxxiii. p. 167.) Presented by Major HARRY H. HERDEX, M.C.

(10) Relics from the excavation of a Viking Settlement at Freswick Links, Caithness. (See *Proceedings*, vol. lxxiii. p. 71.) Presented by Admiral Sir EDWYN ALEXANDER-SINCLAIR, G.C.B.

DONATIONS TO AND PURCHASES FOR THE LIBRARY.

May to December 1938. Donations.

(1) Calendar of Inquisitions. Vol. xii. Edward III. London, 1938.

Acts of the Privy Council of England, 1626. June-Dec. and Jan.-Aug. London, 1938.

Curia Regis Rolls of the Reign of Henry III. 3-4. Henry III. London, 1938.

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Calendar of State Papers. Domestic Series. October 1, 1683-April 30, 1684. London, 1938.

Calendar of State Papers. Domestic Series. May 1, 1684-February 5, 1685.

Calendar of State Papers, Colonial Series. America and West Indies, 1731. London, 1938.

Calendar of the Close Rolls. Henry IV. Vol. v. Index. 1399-1413. Presented by HIS MAJESTY'S GOVERNMENT.

(2) A Topographical Catalogue of the Private Tombs of Thebes. By Alan H. Gardiner, D.Litt., and Arthur E. P. Weigall. London, 1913.

The Excavations at Colliton Park, Dorchester, 1937-38. First Interim Report. By Lt.-Col. C. D. Drew, D.S.O., F.S.A., and K. C. Collingwood Selby.

Coins from Seleucia on the Tigris. By Robert Harbold McDowell. Michigan, U.S.A., 1935.

Entdeckungen im Alterthum versucht von N. H. Brehmer, M.D. I Band, 1 und 2. Weimar, 1822.

Die Oesterreichischen Länder im Altertum. By Rudolf Egger.

Eine syrische Göttertrias. By Rudolf Egger. Reprints, *Wiener Studien*. Band liv.

Odal Rights and Feudal Wrongs. A Memorial for Orkney. David Balfour, Edinburgh, 1860.

A History of Persia. By Lt.-Col. P. M. Sykes, C.M.G. 2 vols. London, 1915.

Town and Town-planning, Ancient and Modern. By T. Harold Hughes and E. A. G. Lamborn, Hon. M.A.(Oxon.). Oxford, 1923.

Museum of Fine Arts, Boston. Catalogue of Arretine Pottery. By George H. Chase, Ph.D. Boston and New York, 1916.

Ruins of Desert Cathay: Personal Narrative of Explorations in Central Asia and Westernmost China. By M. Aurel Stein. 2 vols. London, 1912.

Western Seaways. By O. G. S. Crawford. (From *Custom is King*.)

Untersuchungen zur vor- und frühgeschichtlichen Besiedlung Niederösterreichs. By Dr Ernst von Nischer-Falkenhof. Reprint, *Mitteilungen der Geographischen Gesellschaft*. Wien. Band 80.

Fifty Years of Greek Numismatics. (Reprinted from *The Transactions of the International Numismatic Congress*. London. June 30-July 6, 1936.) By the Donor.

Presented by Sir GEORGE MACDONALD, K.C.B., LL.D., etc.

(3) Broches du Musée d'Antiquités de Rouen.

Vases sigillés gallo-romains dans le Département de l'Enre.

Presented by LÉON COUTIL, Hon. F.S.A.Scot., the Author.

(4) A Calendar of Cases of Witchcraft in Scotland. 1510-1727. Compiled by George F. Black, Ph.D. New York, 1938. Presented by NEW YORK PUBLIC LIBRARY.

(5) The Valencian Styles of Hispano-Moresque Pottery. By A. van de Put, F.S.A. New York, 1938. Presented by THE HISPANIC SOCIETY OF AMERICA.

(6) County of Middlesex. Calendar to the Sessions Records. N.S. Vol. iii. 1615-16. London, 1937. Presented by THE MIDDLESEX STANDING JOINT COMMITTEE, Guildhall, Westminster.

(7) Etruscan Collections in the Royal Scottish Museum, Edinburgh, and the National Museum of Antiquities of Scotland, Edinburgh. (Extract from *Studi Eturschi*, vol. xi.) Presented by M. A. JOHNSTONE, the Author.

(8) Third Annual Report. 1938. Presented by THE TRUSTEES, THE MANX MUSEUM AND ANCIENT MONUMENTS.

(9) The Clan MacLeod Magazine, 1938. Presented by THE CLAN MACLEOD SOCIETY.

(10) Hull Museum Publications, Nos. 195, 196. Presented by THE DIRECTOR OF THE HULL MUSEUM.

(11) Banffshire at the Revolution of 1689 and during King William's Reign. By James Grant, M.A., LL.B. Banff, 1906.

A Graphical Illustration of the Metropolitan Cathedral Church of Canterbury. By W. Woolnoth. London, 1816.

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Marchioness of Tullibardine. With a Roll of the Perthshire men of the Present Day who have seen Active Service under the British Flag. Compiled by the Editor and Jane C. Macdonald. Perth, 1908.

History of the Lands and their Owners in Galloway. By P. H. McKerlie, F.S.A.Scot., F.R.G.S., etc. New Edition. Vols. i and ii. Paisley, 1906.

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Presented by THE LIBRARIAN, Aberdeen University.

(12) Thirty-first Report to the Secretary of State for Scotland on the National Galleries of Scotland. 1937. Edinburgh, 1938. Presented by THE BOARD OF TRUSTEES.

(13) Index to Books, Brochures, Articles, Verses, in the Church of Scotland Library, Castlehill, Edinburgh. Dumfries, 1938. Presented by Rev. J. KING HEWISON, D.D., F.S.A.Scot., the Compiler.

(14) Morven Institute of Archaeological Research. Excavation of an Untouched Chamber in the Lanhill Long Barrow.

The Early Bronze Age in Wessex. By Stuart Piggott. Reprints from *Proceedings of the Prehistoric Society*, 1938. Presented by ALEXANDER KELLER, F.S.A.Scot., and STUART PIGGOTT, F.S.A., the Authors.

(15) The Orient and Europe. Address. Presented by Professor V. GORDON CHILDE, D.Litt., D.Sc., F.S.A.Scot., the Author.

(16) In Famed Breadalbane: The Story of the Antiquities, Lands and People of a Highland District. Perth, 1938. Presented by the Rev. WILLIAM A. GILLIES, B.D., F.S.A.Scot., the Author.

(17) A History of the Clan MacCrimmon. Part I. Compiled by G. C. B. Poulter, F.S.A.Scot. Camberley, 1938. Presented by THE CLAN MACCRIMMON SOCIETY.

(18) A History of the House of Hamilton. By Lt.-Col. George Hamilton. Edinburgh, 1933. Presented by GEORGE CHAPMAN, 200 Fifth Avenue, New York.

(19) Flints: an illustrated Manual of the Stone Age for Beginners. British Museum Publication, 1932. Presented by A. J. H. EDWARDS, F.S.A.Scot., Director of the Museum.

(20) Old Scottish Silver. Catalogue of Loan Collection in Scottish Historical Pavilion. Issued under the auspices of the Historical Subcommittee of the Scottish Committee, Empire Exhibition, Scotland, 1938. Presented by VICTOR J. CUMMING, F.S.A.Scot., the Compiler.

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The Two Earliest Masonic MSS. Transcribed and Edited by Douglas Knoop, M.A., Hon.A.R.I.B.A., G. P. Jones, M.A., and Douglas Hamer, M.C., M.A. Manchester, 1938.

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Anglo-Saxon Art, to A.D. 900. By T. D. Kendrick, M.A., F.S.A. London, 1938.

Glamis Castle: Its Origin and History, with a brief account of the Early Church of the Parish. By the Rev. John Stirton, C.V.O., D.D., F.S.A.Scot. Forfar, 1938.

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January 1939.

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(1) Journal of the Commissioners for Trade and Plantations. Jan. 1776-May 1782. London, 1938.

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Calendar of Treasury Books. Oct. 1700-Dec. 1701. London, 1938.

Close Rolls of the Reign of Henry III. 1268-1272. London, 1938.

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(2) The Amazing Adventure of Betty Mount. Fiftieth Anniversary Year. Lerwick, 1936.

Festschrift für August Oxé zum 75 Geburtstag, 23 Juli 1938. Darmstadt, 1938.

Presented by Sir GEORGE MACDONALD, K.C.B., *President*.

(3) Cahiers d'Archéologie et d'Histoire d'Alsace. Anzeiger für Elsassische Altertumskunde. Nos. 111-116 xxix^e année. Mars, 1938. Presented by R. FORRER, Musée Préhistorique et Gallo-Romain, Strassbourg, Palais Rohan.

(4) Quaternary Conditions in Malta. Reprint from the *Geological Magazine*. Vol. lxxv. Jan. 1938.

Mesolithic Flints from the Submerged Forest at West Hartlepool. Reprint from *Proceedings of the Prehistoric Society*, 1936.

Presented by C. T. TRECHMANN, D.Sc., F.G.S., Castle Eden, Co. Durham, the Author.

(5) Publications of the Clan Lindsay Society. Vol. v, No. 17. Edinburgh, 1938. Presented by Dr JOHN LINDSAY, M.A., c/o Messrs Lindsay & Co., Ltd., 17 Blackfriars Street.

(6) Genealogical Chart of Galloway and Ayrshire Families. Compiled

by Mr J. Kevan-McDowall, 1938. Presented by DAVID COUPER THOMSON, J.P., D.L., F.S.A.Scot.

(7) Proceedings of the Scottish Anthropological and Folklore Society. Vol. iii, No. 1. Oct. 1938. Presented by THE SOCIETY.

(8) The Palace of Holyroodhouse, Abbey and Environs. Official Guide. Edinburgh, 1937. Presented by Mr JUSTINUS DE WET, 105 Lordship Road, Manor House, London.

(9) Mythological Bonds between East and West. Copenhagen, 1938. Presented by DOROTHEA CHAPLIN, F.S.A.Scot., the Author.

(10) Society of Friends of Dunblane Cathedral. Vol. iii. Part I. 1938. Presented by THE SOCIETY.

(11) Museums and the Public. Issued by the Carnegie United Kingdom Trust. Edinburgh, 1938.

The Museums and Art Galleries of the British Isles. By S. F. Markham, M.A., B.Litt., M.P. Edinburgh, 1938.

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(12) The House of Glendonwyn. Part xi: Laggane, Mochrum, Edinburgh. Presented by G. T. CLINDENING, Savings Bank, Adelaide, S. Australia.

(13) National Museum of Wales. The Personality of Britain, its Influence on Inhabitant and Invader in Prehistoric and Early Historic Times. By Sir Cyril Fox, Ph.D., V.P.S.A. Cardiff, 1938. Third Edition. Presented by Professor V. G. CHILDE, F.S.A.Scot.

(14) The Orygynale Cronykil of Scotland. By Andrew of Wyntoun. Edited by David Laing. 3 vols. Edinburgh, 1872-79.

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Edinburgh Papers. By Robert Chambers, F.R.S.E., etc. (1) Ancient Domestic Architecture of Edinburgh: Edinburgh Castle as before the Siege of 1573. (2) Edinburgh Merchants and Merchandise in Old Times. London and Edinburgh, 1859.

Churchyard Chips concerning Scotland: being a Collection of his Pieces relative to that country; with Historical Notices, and a Life of the Author. By George Chalmers, F.R.S.S.A. London, 1817.

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A Short Chronicle of the Reign of James the Second, King of Scots.

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Documents relative to the Reception at Edinburgh of the Kings and Queens of Scotland. A.D. 1561-1650. By Sir Patrick Walker. Edinburgh, 1822.

Annals of Scotland from the Accession of Malcolm III., surnamed Canmore, to the Accession of Robert I., and from the Accession of Robert I., surnamed Bruce, to the Accession of the House of Stewart. By Sir David Dalrymple. Edinburgh, 1776-79. 2 vols. in 4. 1 wanting.

The History of the Affairs of Church and State in Scotland from the Beginning of the Reformation in the Reign of King James V. to the Retreat of Queen Mary into England, Anno 1568. Vol. i. By Robert Keith. Edinburgh, 1734.

Caledonia. Vols. i., ii. and iii. By George Chalmers, F.R.S., and S.A. London, 1807-24.

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